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ABSTRACT

This teacher's guide and student workbook are part of a series of supplementary curriculum packages of alternative methods and activities designed to meet the needs of Florida secondary students with mild disabilities or other special learning needs. Content is based on the Florida Curriculum Frameworks and correlates to the Sunshine State Standards. The Personal Fitness PASS (Parallel Alternative Strategies for Students) teacher's guide presents seven units concerned with various health and fitness topics. Each unit includes a vocabulary list, an introduction to the topic, facts and fallacies, content presented in words and graphics, exercises, quizzes, and answer keys in the teacher's guide. A final examination is also included. The following units are explored in both texts: (1) "Physical Fitness"; (2) "Body Composition and Nutrition"; (3) "Flexibility"; (4) "Muscular Fitness"; (5) "Cardiovascular Fitness"; (6) "Consumer Health Issues"; and (7) "Personal Health Program." Appendices to the teacher's guide include correlations to Florida student performance standards and lists of multimedia sources and Federal and Florida health agencies. The student workbook contains vocabulary, an explanation of the content, and practice exercises designed to evaluate comprehension. (Contains 14 references.) (DB)

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Personal Fitness
Teacher's Guide [and Student Workbook]
Revised Edition
Parallel Alternative Strategies for Students
(PASS)

Lee Ann Broussard
Jeren Goldstein
Sylvia B. Walford

Florida State Department of Education

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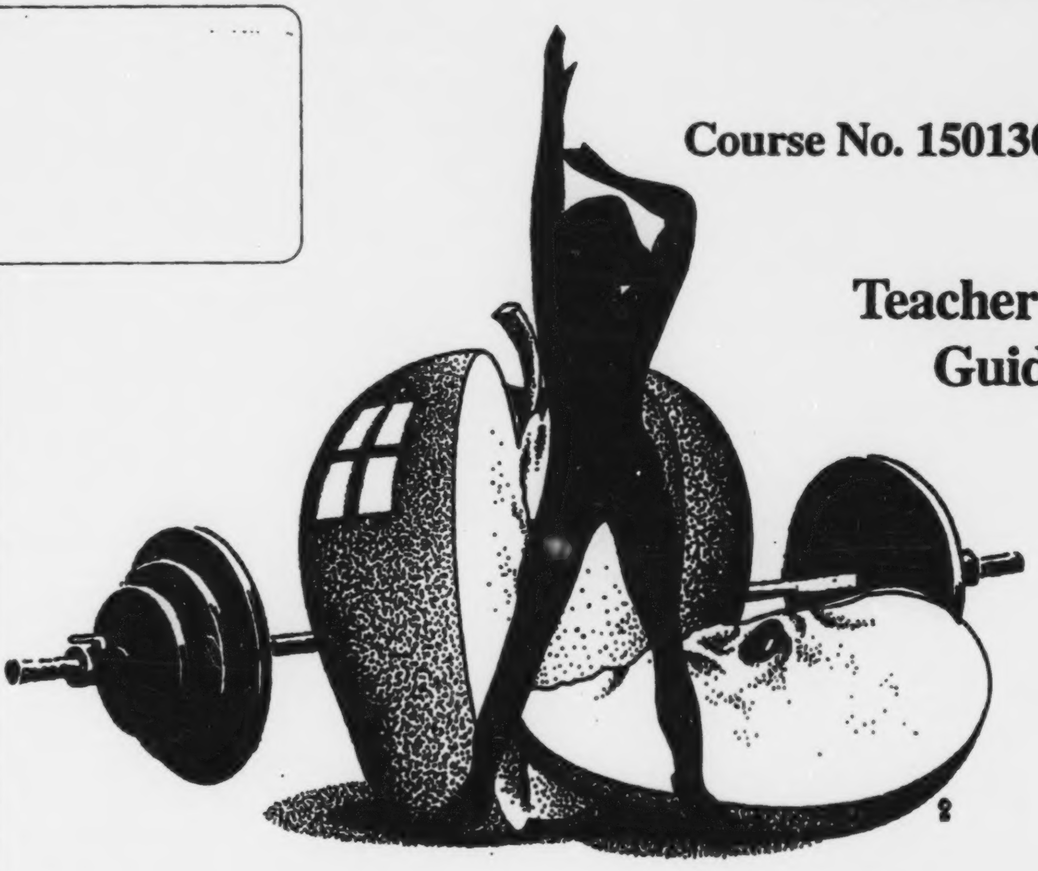
Personal Fitness

Revised Edition

Course No. 1501300

Teacher's Guide



Parallel
Alternative
Strategies for
Students

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Personal Fitness

Teacher's Guide

with Addendum:
Correlations to Sunshine State Standards

Bureau of Instructional Support and Community Services
Division of Public Schools and Community Education
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Personal Fitness

Teacher's Guide

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Acknowledgments

The first edition of the *Parallel Alternative Strategies for Students (PASS)* volume for *Personal Fitness* was published in 1989. The content of the revised edition of the student book and the suggestions for the Teacher's Guide were written by Lee Ann Broussard, physical educator, professional fitness consultant/trainer, and columnist.

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Foreword

Parallel Alternative Strategies for Students (PASS) books are content-centered packages of alternative materials and activities designed to assist secondary teachers to meet the needs of students of various achievement levels in the basic education content courses. Each *PASS* offers teachers supplementary activities and strategies to assist certain exceptional students and low-achieving students in the attainment of the intended outcomes of a specific course.

The alternative methods and activities found in the *PASS* materials have been adapted to meet the needs of students who have mild disabilities and are mainstreamed in content classes. The *PASS* materials provide basic education teachers with a modified approach for presenting the course content that may be useful with these students and other students who have learning or behavior problems. The *PASS* materials also provide the exceptional education teacher who is teaching subject area courses with curriculum materials designed for these exceptional education students.

Students with learning or behavior problems often require alternative methods of presentation and evaluation of important content. The content in *PASS* differs from the standard textbooks and workbooks in several ways: simplified text; smaller units of study; reduced vocabulary level; increased frequency of drill and practice; shorter reading assignments; clearer and more concise directions; less cluttered format; and the presentation of skills in small, sequential steps.

As material to augment the curriculum for exceptional students and other low-achieving students, *PASS* may be used in a variety of ways. For example, some infusion strategies for incorporating this text into the existing program are as follows:

- additional resource to the basic text
- pre-teaching tool (advance organizer)
- post-teaching tool (review)
- alternative homework assignment
- alternate to a book report
- extra credit
- make-up work
- outside assignment
- individual contract
- self-help modules
- independent activity for drill and practice
- general resource material for small or large groups
- assessment of student learning.

The initial work on *PASS* materials was done in Florida through Project IMPRESS, an Education of the Handicapped Act (EHA), Part B, project funded to Leon County Schools from 1981–1984. Four sets of modified content materials called *Parallel Alternate Curriculum* (*PAC*) were disseminated as parts two through five of *A Resource Manual for the Development and Evaluation of Special Programs for Exceptional Students, Volume V-F: An Interactive Model Program for Exceptional Secondary Students* (IMPRESS). Project IMPRESS patterned the *PACs* after the curriculum materials developed at the Child Service Demonstration Center at Arizona State University in cooperation with Mesa, Arizona, Public Schools.

A series of nineteen *PASS* volumes was developed by teams of regular and special educators from Florida school districts who volunteered to participate in the EHA, Part B, Special Project, Improvement of Secondary Curriculum for Exceptional Students. This project was funded by the Florida Department of Education, Bureau of Student Services and Exceptional Education, to Leon County Schools during the 1984 through 1988 school years. Basic education subject area teachers and exceptional education teachers worked cooperatively to write, pilot, review, and validate the curriculum packages developed for the selected courses.

Continuation efforts have been maintained through the Curriculum Improvement Project. Beginning in 1989, the Curriculum Improvement Project contracted with Evaluation Systems Design, Inc., to design a revision process for the nineteen *PASS* volumes. First, a statewide survey was disseminated to teachers and administrators in the sixty-seven school districts to assess the use of and satisfaction with the *PASS* volumes. Teams of experts in instructional design and teachers in the content area and in exceptional education then carefully reviewed and revised each *PASS* volume according to the instructional design principles recommended in the recent research literature.

Neither the content nor the activities are intended to be a comprehensive presentation of any course. These *PASS* materials, designed to supplement textbooks and other instructional materials, should *not* be used alone. Instead, they should serve as a stimulus for the teacher to design alternative strategies for teaching the student performance standards to the mastery level to the diverse population in a high school class.

PASS provides some of the print modifications necessary for students with special needs to have successful classroom experiences. To increase student learning, these materials must be supplemented with additional resources that offer visual and auditory stimuli, including computer software, videotapes, audiotapes, and laser videodiscs.

User's Guide

The *Personal Fitness PASS* is designed as a combination supplementary text and workbook for course number 1501300. This *PASS* is divided into seven units of study. An alphabetized list of new terms, entitled Vocabulary, is provided at the beginning of each unit. The vocabulary terms may be presented and reinforced prior to or concurrent with the introduction of the concepts. For emphasis and quick recognition, each vocabulary term appears in boldfaced type the first time it is used in the content. The terms are reinforced through the practice activities.

The content information is presented in the student book followed by practice pages at the end of each unit. These written activities provide opportunities for reinforcement of concepts and recall of the vocabulary terms. Student materials may be reproduced for classroom use.

Icons and graphics have been used extensively to assist the students. These visual cues are motivational and create interest while promoting learning. Consistent formatting and easy-to-follow directions build student confidence and promote success.

This separate Teacher's Guide contains: an overview, student performance standards, ideas for presenting instruction, a unit quiz, and answer keys for all activities in each unit. Specific ideas for classroom learning activities are suggested within each unit's guide.

This *PASS* has been correlated to the intended outcomes adopted by the State Board of Education for Personal Fitness course 1501300. (See Appendix A.) All of the intended outcomes for the course are addressed. All of the student performance standards have been at least partially covered in this text. Other resources must be used to teach standards not covered in this text.

No one text can adequately meet all the needs of all students. This *PASS* is no exception. The reading level will be too high for some students and too low for others. The concepts presented will be too complex for some students and too simple for others. It is recommended that teachers use *PASS* with other instructional strategies to aid comprehension and provide reinforcement.

It is expected that the curriculum will be enriched with films, filmstrips, computer activities, guest speakers, and, possibly, field trips. Additional resources are suggested in Appendix B—a brief multimedia bibliography of laserdisks, videotapes, and films. The sources for ordering these materials are included in Appendix C. Appendix D lists a number of help agencies that are valuable resources for this study. The references used in the development of this text and the student text are found in Appendix E.

The teacher-developed materials contained herein combined with other carefully selected resources and effective teaching strategies provide a good foundation for teaching the personal fitness course to exceptional students and other students with learning problems.

Scope and Sequence

1. Introduce the unit.	Determine students' prior knowledge. Give advance organizers to *preview* concepts.
2. Present concepts.	State and clarify the concepts to be learned. Assign the content pages in sections by headings.
3. Create interest or motivation.	Make the new concepts relevant to the students' experiences.
4. Introduce the vocabulary.	Assign the unit vocabulary for the students to study. At the end of the unit use **Identification and Solve** to assess retention.
5. Provide practice.	Assign activities—Short Answer, Fill in the Blanks, Identification, True or False, Matching, Multiple Choice, and Completion.
6. Reinforce.	Promote individual performance within a group, such as independent thinking and goal-setting.
7. Enrich.	Use the **Suggested Activities** and your own creative ideas for enrichment. Exs.—computer, laser videodisc, current events, films, etc.
8. Summarize and review.	Provide discussion opportunities and question/answer sessions on the content material. Read **Summary** to review and recap.
9. Evaluate.	**Assign Quiz** found in the *Teacher's Guide*.

10. Feedback

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Physical Fitness

Overview

Physical fitness helps you look and feel better, and it helps you function at a high level in your daily living. There are numerous physical and mental benefits from being physically fit. However, Americans today are generally unfit and overweight, increasing their risk for many diseases.

Cardiovascular fitness, *muscular endurance* and strength, *flexibility*, and *body composition* are all *health-related fitness components*. Cardiovascular fitness is the most essential component for life!

The *skill-related fitness components* of physical fitness are necessary in sports and recreational activities. They include *agility, balance, coordination, power, reaction time*, and *speed*.

To improve your fitness you must periodically alter your exercise routine. The training principles used to reach fitness goals are *overload, progression*, and *specificity*. To overload, or improve your fitness level, you must apply the *F.I.T.* formula. F.I.T. stands for Frequency (how often to exercise), Intensity, (how hard to exercise), and Time (the length of exercise).

Stress is the response of the body to any demands made upon it. Stress is a natural part of life. Our bodies respond the same to both good (eustress) and bad (distress) stress. Learning to recognize our individual sources of stress and using positive coping strategies will reduce our overall stress.

Safety prevention measures should be taken upon starting an exercise program. Among these are a medical checkup, appropriate attire, exercising at your own fitness level, and warming up and cooling down.

Additional precautions must be taken when exercising in high heat and humidity. To prevent heat illnesses it is important to drink plenty of water, avoid wearing rubberized suits, avoid alcohol and caffeine, and get use to the climate gradually.

Heat-related illnesses can occur when a person becomes extremely overheated and dehydrated, or loses a great amount of bodily fluids. *Heat cramps, heat exhaustion*, and *heat stroke* are serious heat illnesses that can occur when the body becomes too dehydrated. If life-threatening heat stroke occurs, emergency medical help should be called immediately.

Suggested Activities

Pre-Exercise Health Form. Have students take the form home, completing it with the help of parents. Hold class discussion on how individual lifestyles directly affect our health now, as well as in our later years. Have students list reasons for practicing good health habits. Explain how heredity influences their own personal health. Verbally go through each question on the form.

Fitness Image Activity. Choose volunteers to generate their list on the chalkboard of the characteristics/habits they feel a healthy and fit person possesses. Have students verbally defend their answers. In large groups encourage students to analyze how the media influences our interpretations of health and fitness images. Use television and magazine advertisements as examples.

Progressive Relaxation. Borrow mats from the P.E. department. Have students take off their shoes, lie down on their back, and get comfortable. Turn off the lights. Read the progressive relaxation exercises very slowly with a soft voice. Repeat each exercise two to three times. Optional: Play relaxing music in the background.

Self-Test. After students have tested themselves on the lifestyle appraisal, place them into small groups. Assign each group one or two topics from the self-test. Have students converse about the relevance of each statement in regards to good health. Report to the class, supporting their findings.

Careers. Invite a qualified personal trainer to come to speak to the class on fitness counseling. Contact a trainer from a local health or athletic training center. Have students develop a list of five questions for the speaker, addressing various populations of people (athletes, older Americans, children, obese individuals, persons with disabilities, beginners, etc.).

STANDARDS

1.0	1.02	1.04	
5.0	5.01	5.02	5.03
	5.04	5.06	
6.0	6.02	6.04	
7.0	7.01	7.02	7.03
	7.04	7.05	7.06
	7.07	7.08	7.09
8.0	8.02		
9.0	9.02	9.03	9.05
11.0	11.01	11.02	11.03
13.0	13.01	13.04	
16.0	16.02	16.03	

Physical Fitness

Matching

Match the **term** *in the left-hand column with its* **description** *in the right-hand column. Write the correct letter on each line.*

Term

_____ 1. muscular endurance

_____ 2. health-related fitness components

_____ 3. physical fitness

_____ 4. cardiovascular exercise

_____ 5. overload

_____ 6. stress

_____ 7. body composition

_____ 8. flexibility

_____ 9. heat stroke

_____ 10. skill-related fitness components

Description

A. an exercise rate that is steady and sustained and at which the heart can supply the oxygen needed by the body

B. body's response to the demands made upon it

C. parts of physical fitness the body must improve and develop to achieve well-being

D. a training principle that says you must increase the demand on the body slightly beyond its normal level to improve physical fitness

E. ability of a joint and muscle group to move through a range of motion

F. ability of the whole body to perform at maximum capability

G. movements that help a person in any physical activity, particularly sports and recreation

H. body stops sweating and exhibits a dangerously high temperature; considered a medical emergency

I. ability to use certain muscles repetitively for a long period of time

J. percentage of body weight that is fat compared to other body tissue such as muscle or bone

Multiple Choice

Circle the letter of each correct answer.

11. Physically fit people have enough energy to ____________ .

    a. respond to any emergency situations
    b. enjoy leisure time
    c. complete their daily work
    d. all of the above

12. Most people live a ____________ lifestyle; they spend their time sitting rather than being active.

    a. balanced
    b. power
    c. sedentary
    d. cardiovascular

13. Major risk factors for heart disease that you *can* control through a healthy lifestyle include ____________ .

    a. obesity, high blood pressure, high stress, and physical inactivity
    b. obesity, age, sex, and high cholesterol
    c. overweight, age, and heredity
    d. age, sex, and heredity

14. ____________ is a form of stress that is positive and can serve to motivate us and keep us from becoming bored.

    a. Postress
    b. Eustress
    c. Distress
    d. Agility

15. Positive coping strategies for managing stress include __________.

    a. exercise regularly and practice relaxation techniques
    b. eat a healthy diet, deny your feelings, and behave aggressively
    c. exercise regularly, procrastinate, and blame others for your failures
    d. use alcohol to relax, behave aggressively, and talk badly about yourself

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 16. When exercising, rely on your thirst to know when to drink fluids.

__________ 17. Decrease the intensity and length of exercise in extreme heat and humidity.

__________ 18. Exercise should be painful—remember: "No pain, no gain!"

__________ 19. Becoming physically fit will help improve your cardiovascular endurance but it will not make you look or feel better.

__________ 20. Relaxation methods such as meditation, yoga, progressive muscular relaxation, and massage therapy can help in reducing stress.

__________ 21. The only way to progress in your fitness program is to gradually do more than you normally do, or to *overload*.

__________ 22. A warm-up helps to bring the heart rate back to normal and relaxes the body.

__________ 23. The most important muscle in the body is the heart.

__________ 24. Cardiovascular endurance, or the body's ability to continuously pump oxygen-rich blood to the muscles, is the most important fitness component for health.

__________ 25. Low weight is more important for health than a low percentage of body fat.

Physical Fitness

Identification (pp. 30-31)

Answers will vary.

Fill in the Blanks (p. 32)

1. stress
2. eustress; distress
3. heart disease
4. self-image
5. positive coping strategies
6. negative coping strategy
7. endorphins

True or False (pp. 33-37)

Answers will vary.

Identification (p. 38)

Answers will vary.

Identification (p. 39)

1. HR
2. SR
3. SR
4. SR
5. HR
6. HR
7. SR
8. SR
9. HR
10. HR
11. HR
12. SR
13. HR
14. SR
15. HR

Multiple Choice (pp. 40-41)

1. d.
2. d.
3. b.
4. d.
5. d.
6. b.
7. b.
8. c.
9. d.
10. d.

True or False (pp. 42-43)

1. True
2. False
3. True
4. False
5. True
6. False
7. False
8. False
9. True
10. True
11. False
12. True
13. False
14. False
15. True

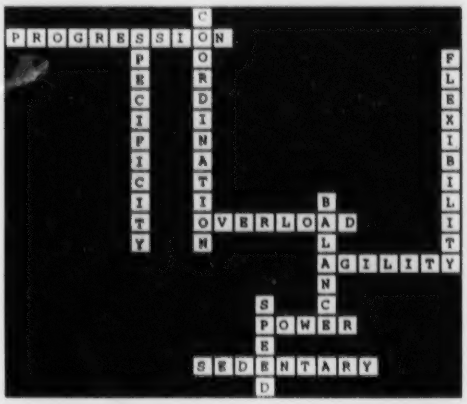
Identification (pp. 44-46)

1. flexibility
2. balance
3. body composition
4. coordination
5. agility
6. cardiovascular exercise
7. health-related fitness components
8. heat exhaustion
9. progression
10. muscular endurance
11. overload
12. specificity

Identification (continued)

13. physical fitness
14. power
15. heat cramp
16. speed
17. sedentary
18. skill-related fitness components
19. heat stroke
20. F.I.T.
21. reaction time

Solve (p. 47)


PROGRESSION
COORDINATION
SPECIFICITY
FLEXIBILITY
OVERLOAD
BALANCE
AGILITY
SPEED
POWER
SEDENTARY

Quiz (pp. 3-6 TG)

Matching

1. I.
2. C.
3. F.
4. A.
5. D.
6. B.
7. J.
8. E.
9. H.
10. G.

Multiple Choice

11. d.
12. c.
13. a.
14. b.
15. a.

True or False

16. False
17. True
18. False
19. False
20. True
21. True
22. False
23. True
24. True
25. False

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Body Composition and Nutrition

Overview

Many people place far too much emphasis on their body weight. Weight alone is not a sufficient measure of health. Knowing how much of your body is *lean body mass* and how much is *fat* is a much more important indicator of health. The proportion of *lean body mass* to fat in the body is known as *body composition*. Seeing the relationship between body weight, body shape, and disease has helped us understand the importance of body composition in achieving good health. Carrying an excessive amount of body fat, or being *overfat* or *obese*, puts us at high risk for many diseases.

To improve body composition you should combine diet and regular exercise. It takes a reduction of 3500 *calories* to lose a pound of fat. To assure that fat is lost and not muscle, it is important to exercise as well as take in fewer nutritious calories.

To achieve good health and a lean, fit body, a low-fat diet and regular exercise are the key ingredients.

Over a million Americans suffer from *anorexia nervosa* or *bulimia*. These eating disorders cause various health-related problems. Victims of these disorders need professional help.

Suggested Activities

Skinfold Measurements. Students will need to work with a partner or small group to accomplish this activity on pages 68-69. Demonstrate proper measurement procedures on a student volunteer. Show them how to accurately locate the point of measurement on the tricep and calf. Emphasize the importance of drawing the fat from the muscle without a hard pinching of the skin. Discuss the results and have students create a list of healthy things they can do to maintain or improve their body composition.

Body Mass Index (BMI). Using the body mass index nomogram or graph on page 73, have the students determine their BMI. They will need a ruler or straight edge. Encourage class discussion on this method.

Body Composition and Nutrition

Ideal Body Weight. Have students refer to the *Figuring Ideal Body Weight* activities on pages 74-78. Students can complete the height method on page 74 independently. Discuss the outcomes. For the frame size method students will need to choose a partner. Skinfold calipers are necessary for this activity. Demonstrate to the class how to measure the elbow girth. Discuss frame size, ideal body weight, and body types.

Ideal Body Weight: Body Fat Percentage. After figuring skinfold measurements, students can put their body-fat percentages into this formula on page 76. Do an example on the chalkboard, taking them through each step. Use calculators.

Eating Disorders. Invite a professional specializing in eating disorders to speak to the class. In advance, have small groups of students develop three questions for the speaker.

Weight-Loss Fallacies. Discuss the fallacies mentioned in the text that are common in regard to exercise and nutrition. Have students interview people, questioning them on their beliefs about nutrition and fitness. Share results with class in a presentation. Develop a bulletin board with advertisements or articles about weight-loss methods. Have students bring in information they find in magazines, newspapers, etc.

STANDARDS

2.0	2.04	2.05
	2.09	2.10
3.0	3.01	
5.0	5.02	
6.0	6.04	
14.0	14.01	14.02
	14.03	14.04

Body Composition and Nutrition

Fill in the Blanks

Use the word list below to complete the following statements. Write the correct answer on each line.

ideal body weight
exercise
abdomen
muscle
calories
lean body mass
fry
body composition
obese
fat

1. A person with a healthy body composition has a high percentage of __________________________ and a low percentage of fat.

2. Because __________________________ tissue is heavier and weighs more than an equal amount of fat tissue, a well-built and physically fit person may actually weigh more than a person who is not fit.

3. More important than a person's weight is his or her __________________________ .

4. Your __________________________ is how much you should weigh if your body fat percentage were in the proper range.

5. Having an apple-shaped body, or carrying excess weight in the __________________________, is believed to increase one's risk for heart disease and certain cancers.

6. Carrying extra ____________________ on your body increases your energy needs and significantly raises your risk for developing health-related problems.

7. To lose a pound of fat, you must burn 3500 ____________________.

8. The most important way to make long-term changes in your body composition is to ____________________.

9. To eat healthily and control your weight, always broil, bake, boil, or steam food rather than ____________________ food.

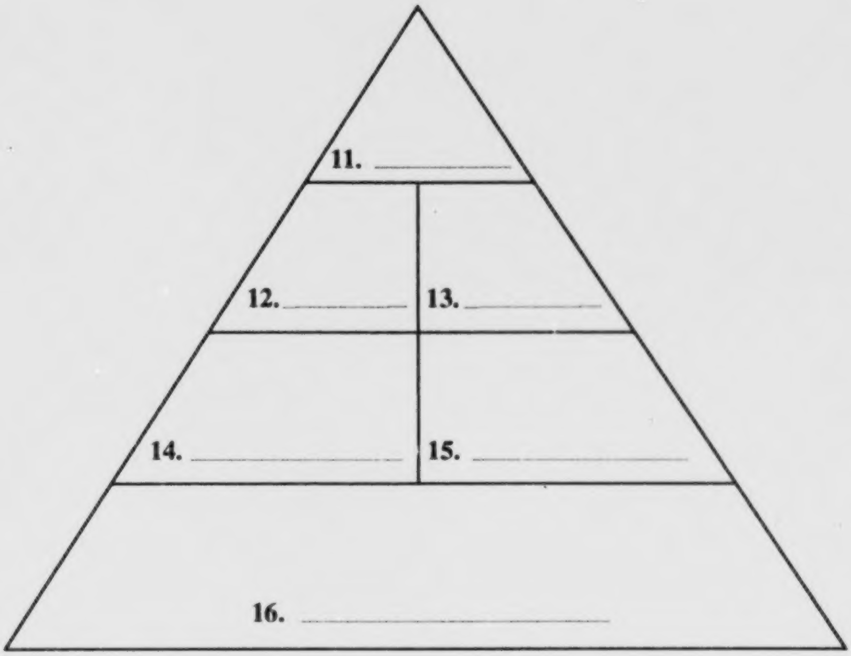
10. A person who is extremely overfat is considered

    ____________________.

Identification

Write the correct food group next to each number in the Food Pyramid below. Write the number of daily servings in the space above each group.

The Food Pyramid



True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 17. A good way to lose weight and keep it off is to go on a starvation diet and lose weight very quickly.

__________ 18. To lose weight avoid carbohydrates such as bread and pasta—they are fattening.

__________ 19. Diuretics will help you lose water weight, but they will not help you lose body fat.

__________ 20. Vitamins are a good source of energy; it's okay to substitute them for food.

__________ 21. If no matter how thin you become, you still see yourself as fat and you refuse to eat, you should seek medical help and counseling.

__________ 22. The best way to lose body fat and gain lean body mass is to exercise regularly and eat a nutritious diet.

__________ 23. It is hard to lose weight when you exercise because exercising increases the appetite.

__________ 24. Eating disorders such as *anorexia nervosa* and *bulimia* can cause chronic health problems and even death.

__________ 25. No matter how overweight you are, you should not lose more than two pounds of weight per week.

Body Composition and Nutrition

Matching (p. 80)

1. E.
2. D.
3. F.
4. A.
5. G.
6. H.
7. K.
8. C.
9. B.
10. I.
11. J.

Multiple Choice (pp. 81-84)

1. c.
2. b.
3. c.
4. a.
5. a.
6. d.
7. d.
8. b.
9. b.
10. d.
11. b.
12. a.
13. d.
14. c.
15. a.

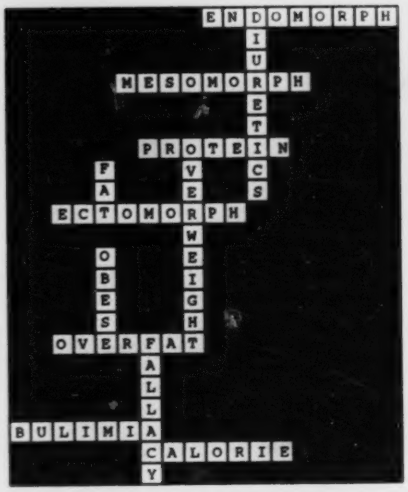
True or False (pp. 85-86)

1. False
2. False
3. True
4. True
5. False
6. True
7. False
8. True
9. True
10. False
11. False
12. False
13. False
14. True
15. True

Identification (pp. 87-88)

1. endomorph
2. overfat
3. lean body mass
4. fat
5. body composition
6. fallacy
7. bulimia
8. carbohydrate
9. mesomorph
10. calorie
11. obese
12. skinfold calipers
13. diuretics
14. proteins
15. ectomorph
16. anorexia nervosa
17. ideal body weight
18. overweight

Solve (pp. 89-90)


ENDOMORPH
DIURETICS
MESOMORPH
PROTEIN
FAT
OVERWEIGHT
ECTOMORPH
OBESE
OVERFAT
FALLACY
BULIMIA
CALORIE

Quiz (pp. 11-14 TG)

Fill in the Blanks

1. lean body mass
2. muscle
3. body composition
4. ideal body weight
5. abdomen
6. fat
7. calories
8. exercise
9. fry
10. obese

Identification

11. Fats (sparingly)
12. Milk, yogurt, and cheese (2-3)
13. Protein sources (2-3)
14. Vegetables (3-5)
15. Fruits (2-4)
16. Breads, cereals, rice, and pasta (6-11)

True or False

17. False
18. False
19. True
20. False
21. True
22. True
23. False
24. True
25. True

Flexibility

Overview

Flexibility is the ability to move muscles and joints through a full *range of motion* without causing pain or injury. Flexibility is important for good health and contributes to overall physical fitness. Proper and regular *stretching* can reduce injuries, lessen the chance of back pain, decrease *muscle* soreness, and help in daily physical activities. Stretching also helps relieve stress and enhances relaxation.

Static, *dynamic*, *passive*, and *ballistic* are all methods of stretching. Static stretching, or moving to a point of tension and holding that position, is the safest way to improve flexibility. Ballistic stretching involves bouncing while stretching. It is considered high risk for injury and is not recommended.

To continually improve your flexibility you must apply the F.I.T. training principles: increase the (F) frequency, the (I) intensity, and the (T) time you spend stretching.

Following some basic guidelines will help you improve your flexibility. Perform all stretches one to three times each, holding each stretch for 20 seconds. Push only to the *stretching point*, or the point of slight discomfort. Do not stretch your muscles to the point of pain or you may overstretch your muscles. Try to stretch every day. Relax and enjoy the good feeling stretching creates!

Suggested Activites

Measuring Flexibility. Students should work in pairs on flexibility assessment. Explain to students that the four flexibility tests will give them a general idea of the flexibility of the major joints of their body. After each assessment, students will interpret their rating and critique their personal level of flexibility. Discuss significance of tests and record final results on flexibility chart. Students will make short- and long-term goals for improving flexibility. Students should be made aware of the problems that can occur when flexibility is inadequate in various joints and muscle groups.

General Stretching Program. Review aloud the guidelines to proper stretching. Analyze and discuss procedures for each individual stretch. Have students volunteer to demonstrate the proper technique for each stretch. Explain the vital components of each stretch, especially where the tension should be felt. Have students discover and create ways to modify stretches to make them more or less intense. After demonstration of each stretch, the whole class will execute the stretches appropriately, holding them for 20 seconds, and performing them one to three times each. Have students describe how stretching feels and the benefits gained from it.

Invite a certified athletic trainer or physical therapist to speak to the class about the importance of stretching in the prevention of injuries.

STANDARDS

1.0	1.01	
2.0	2.01	2.06
3.0	3.01	
4.0	4.01	
5.0	5.02	
6.0	6.01	
8.0	8.01	
9.0	9.01	
11.0	11.02 11.04	11.03 11.05
16.0	16.03	

Flexibility

Multiple Choice

Write the letter of the correct answer.

1. The places where two or more bones fit together are called __________.

   a. skeletons
   b. muscles
   c. joints
   d. flexions

2. __________ your muscles can help increase your flexibility.

   a. Tearing
   b. Stretching
   c. Tensing
   d. Contracting

3. The four different types of stretching are __________.

   a. ballistic, dynamic, flexic, and static
   b. ballistic, flexic, passive, and static
   c ballistic, dynamic, flexic, and passive
   d. ballistic, dynamic, passive, static

4. Regular stretching can help __________.

   a. tighten muscles, and produce tension and stress
   b. increase relaxation and make daily activities easier
   c. increase athletic injuries
   d. cause back pain and poor posture

5. ____________ uses the body's weight to bob or bounce past the muscle's point of tension.

   a. Ballistic
   b. Flexic
   c. Passive
   d. Dynamic

6. One guideline for safe stretching is to move slowly and smoothly into each stretch and hold the position ____________ .

   a. for one minute
   b. until you feel a slight tearing in the muscle
   c. for 20 seconds
   d. until you feel pain

7. ____________ must be stretched and lengthened in order to improve flexibility.

   a. Joints
   b. Bones
   c. Muscles
   d. Warm-ups

8. Safe stretching does not include ____________ .

   a. a cool-down
   b. locking the joints or bouncing
   c. stretching daily
   d. breathing naturally throughout all movements

9. People who are ____________ tend to be flexible.

   a. physically active and overweight
   b. physically inactive and of average weight
   c. physically inactive and overweight
   d. physically active and of average weight

10. Stretching is a way to __________ the muscles.

    a. shorten
    b. increase the size of
    c. lengthen
    d. decrease the blood flow in

Identification

Place a check (√) next to those practices that should *be used for safe stretching. Write a brief description next to those practices you have* checked. *Place an* **X** *next to those practices that should* not *be used when stretching.*

_____ 11. Ballistic stretching: ______________________________

____

____

_____ 12. Warm-up: ______________________________

____

____

_____ 13. Stretch to stretching point: ______________________________

____

____

_____ 14. Static stretching: ______________________________

____

____

____ 15. Standing toe touch: ______________________________

____

____

____ 16. Cool-down: ______________________________

____

____

____ 17. Stretch past stretching point: ______________________________

____

____

____ 18. The Hurdle stretch: ______________________________

____

____

____ 19. Stretch daily: ______________________________

____

____

____ 20. Hold your breath during a stretch: ______________________________

____

____

Flexibility

Fill in the Blanks

Use the word list below to complete each statement. Write the correct answer on each line.

flexibility
tendons
range of motion
physical therapists
bridge
ligaments
knee
exhale
shoulder
overload

21. Some joints such as the __________________ can move only back and forth.

22. Other joints such as the __________________ are less limited and can move around in a circle.

23. Strong tissues that attach muscle to bone and can only be stretched slightly are called __________________.

24. Strong tissues that connect one bone to another are called __________________.

25. An important part of flexibility is the distance a joint can move without pain or injury; this distance is called the __________________.

26. To increase flexibility, you must use the training principle called __________________, and stretch your muscles, ligaments, and tendons farther than they are normally stretched.

27. Some stretches such as the ______________________ can create stress on the back or knee joint.

28. An important guideline for stretching is to ______________________ as you move deeper into a stretch.

29. The ability to move joints and muscles through a full range of motion without pain or injury is called ______________________ .

30. Professionals who help injured people recover and disabled people overcome their physical limitations are called ______________________ .

Flexibility

Multiple Choice (pp. 116-118)

1. c.
2. d.
3. d.
4. b.
5. b.
6. d.
7. a.
8. a.
9. b.
10. a.
11. c.
12. d.
13. d.
14. d.
15. b.

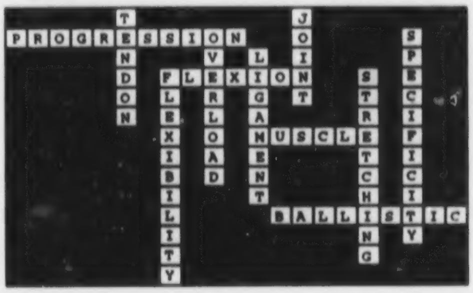
True or False (pp. 119-120)

1. True
2. True
3. False
4. False
5. False
6. True
7. True
8. True
9. False
10. True
11. True
12. True
13. False
14. False
15. True

Identification (pp. 121-122)

1. progression
2. overload
3. specificity
4. passive stretching
5. dynamic stretching
6. ballistic stretching
7. stretching
8. muscle
9. flexibility
10. warm-up
11. joint
12. ligament
13. stretching point
14. static stretching
15. range of motion
16. flexion
17. tendon

Solve (p. 123)



PROGRESSION
TENDON
OVERLOAD
FLEXION
LIGAMENT
JOINT
FLEXIBILITY
MUSCLE
STRETCHING
SPECIFICITY
BALLISTIC

Quiz (pp. 19-24 TG)

Multiple Choice

1. c.
2. b.
3. d.
4. b.
5. a.
6. c.
7. c.
8. b.
9. d.
10. c.

Quiz (continued)

Identification

11. X
12. √—increases body temperature and helps prepare body for vigorous activity
13. √—the point at which the muscle is lengthened and slight discomfort is felt
14. √—safest type of stretching: slowly moving to a point of muscle tension and holding that position
15. X
16. √—stretching longer and deeper into stretches at the end of your workout
17. X
18. X
19. √—frequency and consistency are keys to improving flexibility
20. X

Fill in the Blanks

21. knee
22. shoulder
23. tendons
24. ligaments
25. range of motion
26. overload
27. bridge
28. exhale
29. flexibility
30. physical therapists

Muscular Fitness

Overview

Muscular fitness is important for overall health and fitness. Muscular fitness includes both *muscular strength* and *endurance*. Muscular strength is the ability of a muscle to exert a maximum force in a single effort. Muscular endurance is the ability of a muscle to continue to do work repeatedly over time without *fatigue*.

Improving muscular strength and endurance leads to better appearance, greater resistance to injury, weight loss, and weight maintenance.

A lack of adequate muscular strength or endurance can increase your risk for muscle and joint injuries, diabetes, heart disease, bone loss, back pain, and posture problems. It is much more difficult to control your appropriate body weight without sufficient muscle tissue.

There are two types of *muscle fibers* found in *skeletal muscle*. *Slow-twitch muscle fibers* help in endurance activities; *fast-twitch muscle fibers* are useful for activities requiring speed and *power*.

Isometric, *isotonic*, and *isokinetic* are three methods of exercising to develop muscular strength and endurance. Isometric exercises consist of a muscle contracting, or tightening, while pressing against an immovable object. Isotonics are exercises that cause the muscle to lengthen and shorten through a full *range of motion* while lifting and lowering a weight or resistance. *Calisthenics*, *free weights*, and most weight machines are isotonic. Isokinetic exercises require specially designed machines that work the muscle through the entire range of motion using variable resistance and speed.

To improve muscular strength or endurance, a muscle needs to be consistently overloaded, or worked harder than it is used to. Frequency, intensity, and time should be altered periodically to insure continued progress in a muscular fitness program. If *muscle tone* is desired, then high *repetitions* and low weight should be performed. If muscular strength is desired, then lift heavier weight and perform fewer repetitions.

To ensure safety and best results from a muscular fitness program, always follow safety guidelines. A few of these include beginning with a warm-up, using proper form on all exercises, working the large muscles first, exercising through a full range of motion, using slow and controlled movements, breathing correctly, and ending with a cool-down.

Both males and females can benefit from muscular fitness exercises. Females need not worry about bulking up since they do not have enough of a certain hormone.

Strong muscles make everyday tasks of living, work, and recreation easier and more satisfying.

Suggested Activities

Testing Procedures. Students should work with a partner of the same gender. It is highly recommended that the teacher closely monitor all tests.

Grip Test. While one pair of students is using the dynamometer, have other students work on different activities. Assist students on the proper procedure for the grip-strength test. Let them take a practice trial before actual assessment. Help students convert kilograms to pounds. Emphasize how grip strength highly correlates to overall body strength.

Wall-Sit Test. Emphasize that the partner needs to assure that the student being tested assumes the proper position on the wall. Students may use their own watches or take turns sharing stopwatch(es).

Curl-Up Test. Half of the class can perform this test at one time. Student monitor needs to be sure to hold partner's feet firmly to the floor and count curl-ups properly. Count only correctly performed curl-ups. Students may rest during test if needed and then continue.

Push-Up Test. Males will perform as many standard push-ups as they can without stopping to rest. Emphasize proper body alignment for push-ups. The monitor should place fist at mid-chest, and student being tested should make contact with the fist each time a push-up is performed. Count how many correctly performed push-ups are completed. Females will need a stopwatch to be timed for 30 seconds performing modified push-ups on their knees. They also need to place fist at mid-chest level of student being tested. Resting is allowed if needed. Count only correctly performed push-ups.

Pull-Ups/Flexed-Arm Hang Test. It is highly recommended not to assess push-ups and pull-ups/flexed-arm hang on the same day. Students will have already depleted their strength from one of the upper body assessments.

Explain to males performing pull-ups that they may either use the overhand or underhand grip. This is not a timed test, but rather how many total pull-ups can be performed a one time. Females must use an overhand grip on the bar. Partners may help raise them up to starting position. Timing begins when student is in proper position and stops when the chin touches or falls below the bar.

Isometric Exercises. Explain to students that although isometric exercises have limited value, they can be beneficial. For example, isometric exercises can be performed while sitting for long periods of time either at a desk or in a car. Have class perform all isometric exercises together as a class. Have students discuss and critique the effectiveness of the exercises.

Isotonic Exercises. Make sure that each student has a spotter when lifting weights. Read aloud the safety guidelines from text, emphasizing the importance of following each rule. Analyze each exercise as you go through them. Have a student volunteer demonstrate each exercise while you point out the important components. Emphasize the importance of correct lifting procedures, body area affected, and safety precautions for each exercise. Do not let students lift heavy weights or perform exercises that may be too advanced for them. Students should stretch the muscles worked between all exercises and sets. Encourage students to incorporate some of the exercises at home and keep records of their exercise routines and progress.

Bulletin Board. Divide students into small groups and assign each group a part of the body or a specific muscle group. Prepare a bulletin board with the theme of "Weight Training Exercises." Have students research exercises for their assigned area and display pictures of the exercises they came up with. Demonstrate and explain exercises to the rest of the class.

Health Club Research. Have students visit local health club facilities and get information on the type of weight training equipment available. Compare weight training machines and equipment. Research the various types of equipment and describe the advantages and disadvantages of each, including availability and costs. Report their findings to the class.

Sports/Activities. Have students identify sports and other activities in which slow-twitch muscle fibers would be helpful and those in which fast-twitch muscle fibers would be helpful. Hold a class discussion, making a list on the chalkboard. Ask students which of the activities require muscular endurance and which require strength.

Setting Goals. Help students set short-, medium-, and long-term goals regarding muscular fitness. Have them refer to scores on the assessments. Hold class discussion on ideas for motivation and developing exercise routines.

Promotional. Allow the creative, musically and artistically talented students to write music or make up a song or routine for an aerobics class. Others could make a poster or an advertisement inviting new members to join a fitness club. Some could design a new piece of exercise equipment, complete with a drawing and promotional material. Writers could create a short topical article for the health section of the newspaper.

STANDARDS

1.0	1.01	
2.0	2.03	2.08
3.0	3.01	
4.0	4.01	
5.0	5.02	
6.0	6.03	
8.0	8.01	
9.0	9.03	
11.0	11.02 11.09	11.03
13.0	13.01	
15.0	15.01	15.05
16.0	16.03	

Muscular Fitness

Multiple Choice

Circle the letter of each correct answer.

1. ____________ should be used to develop muscular endurance.

   a. Few repetitions with heavy weights
   b. Many repetitions with heavy weights
   c. Few repetitions with light weights
   d. Many repetitions with light weights

2. Fast-twitch muscle fibers are best suited for ____________ .

   a. endurance activities
   b. quick, short bursts of power movements
   c long-distance swimming
   d. all of the above

3. ____________ is *not* a method of increasing strength.

   a. Isometric
   b. Isotonic
   c. Isomeric
   d. Isokinetic

4. ____________ should be done in a safe and effective strength training session.

   a. A proper warm-up
   b. Performing the movements slow and with control
   c. Lifting through a full range of motion
   d. All of the above

5. ____________ should be used to develop muscular strength.

   a. Few repetitions with heavy weights
   b. Many repetitions with light weights
   c. Many repetitions with heavy weights
   d. None of the above

6. Slow-twitch muscle fibers are best suited for ____________ activities.

   a. power
   b. endurance
   c. speed
   d. agility

7. Weight training workouts should begin with ____________ .

   a. the largest muscles
   b. the smallest muscles
   c. the chest muscles
   d. any of the muscles; order is not important

8. For adequate muscle recovery, rest your muscles ____________ between each strength training session.

   a. 2 hours
   b. 12 hours
   c. 24 hours
   d. 48 hours

9. The ____________ best describes muscular endurance.

   a. ability to perform one push-up
   b. ability to exert a maximum force
   c. ability to perform a movement repeatedly over a period of time
   d. ability to bench press your body weight

10. The health-related components of physical fitness related to muscle fitness are ____________ .

   a. muscular strength
   b. muscular aerobics
   c. muscular endurance
   d. both a. and c.

Muscular Fitness

11. __________ is *not* an important reason to develop adequate muscular strength and endurance.

    a. To improve physical ability and athletic performance
    b. To help reduce the risk of muscle and joint injuries
    c. To look like a body builder
    d. To help improve body composition

12. In an __________ exercise a muscle is pressed against an immovable object.

    a. isotonic
    b. isometric
    c. isogeneic
    d. isokinetic

13. The weight of your own body is used for resistance in __________ exercises.

    a. weight training
    b. free weights
    c. calisthenics
    d. body

14. In __________ exercise the muscle is worked through the full range of motion using variable resistance and speed.

    a. isotonic
    b. isometric
    c. isokinetic
    d. isobar

15. __________ describes the inability to perform physical activity efficiently.

    a. Fatigue
    b. Overload
    c. Overtrained
    d. Cheating

16. A ____________ describes the number of times a complete exercise is performed.

    a. set
    b. repetition
    c. resistance
    d. frequency

17. ____________ is the principle of training that says if strength is to be increased in the calves, calf exercises must be performed.

    a. Frequency
    b. Overload
    c. Progression
    d. Specificity

18. Exercises which involve repeated muscular contraction against an opposing force are called ____________ .

    a. resistance training
    b. weight training
    c. exercise training
    d. both a. and b.

19. The groups of tissue surrounding bones that produce physical movements are called ____________ .

    a. tendons
    b. muscles
    c. ligaments
    d. fibers

20. ____________ describes firm, defined muscles resulting from muscular strength and endurance training.

    a. Bulky muscle
    b. Muscle tone
    c. Calisthenics
    d. Flabby muscle

Muscular Fitness

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

_________ 21. Steroids are recommended by doctors and experts as a safe method of developing muscle mass.

_________ 22. Females will develop big, bulky muscles and lose their feminine look if they train with weights.

_________ 23. Holding your breath while lifting weights may cause you to become dizzy.

_________ 24. If you are new to muscular fitness, begin with heavy weights so you can quickly progress.

_________ 25. A proper warm-up makes you less prone to a muscle or joint injury.

Muscular Fitness

True or False (pp. 166-167)

1. True
2. False
3. True
4. True
5. False
6. True
7. True
8. False
9. True
10. True
11. False
12. False
13. True
14. True
15. False
16. True
17. False
18. False
19. True
20. True

Identification (p. 168)

1. thighs, buttocks, legs
2. back
3. arms
4. thighs, buttocks, legs
5. shoulders
6. chest
7. abdominals
8. arms
9. back
10. thighs, buttocks, legs
11. chest
12. arms
13. shoulder
14. abdominals

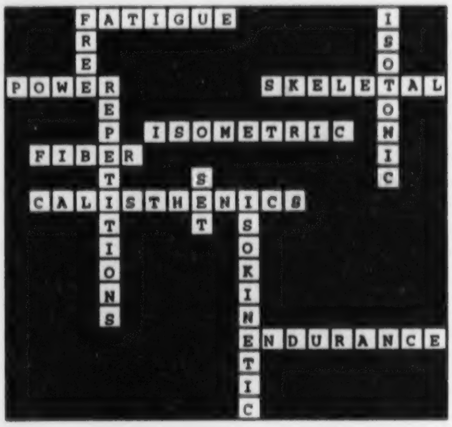
Completion (p. 169)

Correct answers will be determined by the teacher.

Identification (pp. 170-171)

1. set
2. fast-twitch muscle fiber
3. slow-twitch muscle fiber
4. muscular endurance
5. muscle fiber
6. isokinetic
7. isotonic
8. muscle tone
9. resistance training
10. weight training
11. calisthenics
12. free weights
13. muscular strength
14. fatigue
15. repetitions
16. muscular fitness
17. power
18. skeletal muscles
19. isometric

Solve (pp. 172-173)


FATIGUE
FREE
ISOTONIC
POWER
SKELETAL
ISOMETRIC
FIBER
REPETITIONS
SET
CALISTHENICS
ISOKINETIC
ENDURANCE

Quiz (pp. 31-35 TG)

Multiple Choice

1. d.
2. b.
3. c.
4. d.
5. a.
6. b.
7. a.
8. d.
9. c.
10. d.
11. c.
12. b.
13. c.
14. c.
15. a.
16. b.
17. d.
18. d.
19. b.
20. b.

True or False

21. False
22. False
23. True
24. False
25. True

Cardiovascular Fitness

Overview

Exercising your heart improves your health and wellness more than any other type of exercise. Having a fit and healthy heart improves your energy level, burns off body fat and helps you to relax. A fit heart also reduces your risk for heart disease and improves your quality of life.

Cardiovascular fitness, or the body's ability to deliver oxygen to working muscles, is basic to all fitness programs.

The cardiovascular system, also referred to as the *circulatory system*, includes your heart, blood vessels, and blood. It is this system that circulates oxygen-rich blood to the muscles throughout your body. Your heart is the muscle that continuously pumps blood. It is the most important muscle in your body. The body cannot survive for long once the heart stops beating.

Blood passes through the lungs and picks up oxygen. This oxygen-rich blood then enters the left side of the heart. This side of the heart pumps it out through a large blood vessel, the *aorta*. The blood then continues through the smaller blood vessels called *arteries* to all parts of the body. As the blood delivers oxygen to the muscles, it picks up waste. This waste-filled blood flows to the right side of the heart. The heart then pumps this oxygen-empty blood to the lungs, where it exchanges its waste for oxygen. The blood then returns to the left side of the heart and repeats its circular route.

A fit cardiovascular system efficiently circulates blood through the body. Having a strong cardiovascular system helps you feel better, look better, and reduces your risk of heart disease. Staying fit helps control *risk factors* for heart disease such as high *blood pressure* and high *cholesterol*. Not smoking, staying at the proper body weight, reducing stress, and being physically active all help reduce your risk of heart disease and keep you healthy.

Aerobic exercises are the best types of activities to aid cardiovascular fitness. Aerobic exercises are continuous activities that use the large muscle groups. They create an increased demand for oxygen. The increased need for oxygen-rich blood raises your *heart rate*. There are many ways to exercise your heart. Walking, jogging, swimming, bicycling, aerobics classes, in-line skating, and cross-country skiing are all *aerobic* exercises. Aerobic exercise improves your body's ability to use oxygen.

By monitoring your *pulse* when you exercise, you can be sure you are working in the *target heart rate zone*. The target heart rate zone is 60 percent to 90 percent of your *maximum heart rate*. Exercising in this zone will develop your aerobic fitness.

You will notice a drop in your resting heart rate as your fitness level improves. You will find yourself recovering from exercise more quickly. You will also find that you are able to do more work with less effort.

The lifestyle you lead today will affect your health in future years. Treat your heart and body properly and you can be rewarded with good health! Regular aerobic exercise can lengthen your life, and also improve the quality of your life. Have a healthy heart!

Suggested Activities

Heart Anatomy and Function. Contact the local American Heart Association and American Lung Association for free educational information (handouts, brochures, videotapes). Describe and discuss signs of an impending heart attack. Initiate a class discussion on what lifestyle might help to avert cardiovascular problems.

Use a plastic heart model to demonstrate basic heart structure. Point out major arteries, veins, and the path of circulation. Ask for student volunteers to use the model to name the chambers and functions.

Why be fit? Ask students to explain in their own words what it means to be physically fit. Have them compile a list of the advantages of being fit or the disadvantages of being unfit.

Article. Ask students to write an article for the school newspaper entitled, "Inactivity is Hazardous to Your Health." Cooperative learning groups could subdivide the article into manageable sections, and editors could be assigned. Pursue the publication of the article in the paper.

Cardiovascular Fitness

Benefits of Aerobic Exercise. Hold a class discussion on the benefits of aerobic exercise. Write this statement on the chalkboard: Aerobic exercise is the most healthy thing you can do for your body. Make a fish-bone map to record reasons students offer to explain why the statement is true. Talk about how you could convince someone to start exercising.

Name the Category Game. Make fitness flashcards with fitness components written on them: 1) flexibility, 2) muscular strength, 3) muscular endurance, and 4) cardiovascular fitness. Divide the class into small groups. Give each group four cards with the fitness categories on them. Teacher will devise a list of many fitness activities and exercises. When teacher names a fitness activity or particular exercise, students will discuss amongst their group what primary fitness component it develops. They will then hold up the appropriate card. Each group with the correct answer receives a designated amount of points.

Fitness Survey. Have students do a survey of "Teens' Favorite Form of Exercise." Make an exercise preference chart or graph to show the results.

Blood Pressure. Ask the school nurse to talk to the class about the importance of controlling blood pressure. Ask nurse and/or other volunteers to assist in taking students' blood pressure.

Pulse Taking. Demonstrate proper method of taking a radial or carotid pulse to students. Take pulse for 10 seconds and multiply by 6. Have students practice taking radial pulse on one another. While one student takes his or her own carotid pulse, have the other student take their radial pulse. Compare pulse rates for accuracy. Spot check several students to make certain each is taking the heart rate correctly, with the fingertips, not the thumb. **Variation**: Let students listen to their own heart beats with a stethoscope.

Target Heart Rate Zone. Show an example of how to figure a target zone on the chalkboard before students attempt to calculate their own. Take them through the sample step by step. Next, let students calculate their own individual target zone using their resting heart rates.

(Note: If they do not know their resting rates use 72 BPM for males and 78 BPM for females.) Show students how to round off their final answer. Have students compare their own individual target heart rate zones with the average shown in the graph in the unit. Check each student's calculation and discuss how their answers apply to monitoring exercise intensity.

Three-Minute Step Test. Borrow a metronome from the music teacher and record three to four minutes of 96 beats per minute. Step test needs to be demonstrated for proper technique. Set the metronome at 96 BPM and demonstrate stepping up, up, down, down, for a few cycles. Instruct students on proper foot placement. Let them practice before the test. Remind them not to talk or swing arms during the three minutes. Immediately after three minutes, students need to quickly find their pulse, sit down, and be ready to count. The pulse rate will be taken afterwards for a complete minute.

One-Mile Run. Lead students through proper warm-up and stretching exercises. Emphasize the importance of pacing themselves throughout the mile run. Students need to pay close attention to their times when they cross the finish line. Instruct students to continue walking for another lap upon completion of their mile to cool down.

Invite a certified aerobics instructor to your class. Have the instructor talk to the class about the basics of aerobic exercise and answer questions students may have. Have instructor lead the class in aerobic exercise. **Variation**: Rent a videotape on aerobic exercise to use with the class.

STANDARDS

1.0	1.01	1.02	1.04
2.0	2.02	2.07	
3.0	3.01		
4.0	4.01		
5.0	5.02		
6.0	6.02		
8.0	8.01		
9.0	9.02		
11.0	11.01	11.02	11.03
	11.06	11.07	11.08
	11.10		
13.0	13.01	13.02	13.03
	13.04		
16.0	16.03		

Cardiovascular Fitness

Multiple Choice

Write the letter of the correct answer.

1. "Aerobic" means ________ .
   - a. with power
   - b. with wings
   - c. with thought
   - d. with oxygen
2. The best surface on which to jog or run is ________ .
   - a. concrete sidewalk
   - b. a level grassy path
   - c. hilly pavement
   - d. a rough field
3. Every exercise program should begin with a warm-up period to ________ .
   - a. increase blood flow to muscles
   - b. prepare your heart and lungs for more vigorous activity
   - c. increase body temperature
   - d. all of the above
4. When running or jogging, try to land on the ________ of your foot.
   - a. heel
   - b. ball
   - c. toes
   - d. front

5. You can tell if your aerobic exercise program is strengthening your heart by ____________ .

   a. a lower resting heart rate
   b. being able to work harder
   c. being able to last longer
   d. all of the above

6. Hypertension is another name for ____________ .

   a. high stress
   b. cholesterol
   c. high blood pressure
   d. nervousness

7. Of the following activities, ____________ is the best one to help you develop a healthy heart.

   a. weight lifting
   b. volleyball
   c. football
   d. long distance running

8. People with a history of heart disease in their family are ____________ to develop heart disease themselves.

   a. less likely
   b. more likely
   c. not likely
   d. none of the above

9. Conditions that increase the chance of heart disease are commonly called ____________ .

   a. bad habits
   b. heart stoppers
   c. risk factors
   d. bad luck

Cardiovascular Fitness

10. Risk factors that cannot be controlled are ____________ .

a. age
b. heredity
c. sex
d. all of the above

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 11. The older you get the more susceptible to a heart attack you become.

__________ 12. The best time to take your resting heart rate is after exercising.

__________ 13. You must workout at least three days a week to develop cardiovascular fitness.

__________ 14. Recovery heart rate is the heart rate taken shortly after exercise.

__________ 15. The cool-down is the beginning phase of exercise.

__________ 16. The number one killer in America is cardiovascular disease.

__________ 17. The cardiovascular system includes the heart, blood vessels, and blood.

__________ 18. The carotid artery is located in the wrist.

__________ 19. The three principles of overload are frequency, intensity, and time.

__________ 20. The positive physical fitness changes that occur in the body as a result of exercise are called training effect.

Cardiovascular Fitness

Fill in the Blanks (pp. 223-224)

1. pump
2. heart; blood vessels
3. chambers
4. atria
5. ventricles
6. valves
7. red
8. blue
9. carbon dioxide
10. aorta
11. arteries
12. capillaries
13. veins
14. circulatory system

Identification (p. 225)

1. right atrium
2. left atrium
3. right ventricle
4. left ventricle

Multiple Choice (pp. 226-229)

1. c.
2. b.
3. b.
4. c.
5. c.
6. d.
7. d.
8. d.
9. c.
10. d.
11. b.
12. d.
13. b.
14. d.
15. c.
16. b.
17. d.
18. c.
19. d.
20. b.

Short Answer (pp. 230-231)

1. warm-up
2. anaerobic
3. one-mile run; three-minute step test
4. exercise heart rate
5. cardiovascular disease
6. cholesterol
7. It does not allow sweat to evaporate.
8. allows the body to gradually return to normal; prevents blood from pooling in the muscles; helps body to readjust to less physical demand
9. five minutes
10. walking; running; swimming; bike riding
11. the cushioning effect of the water; the resistance of the water; the strengthening effect on the upper body
12. steadily, vigorously, and continuously

True or False (pp. 232-233)

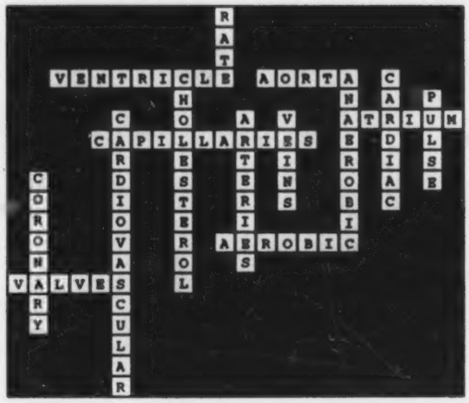
1. True
2. True
3. True
4. False
5. True
6. False
7. True
8. False
9. True
10. False
11. False
12. True
13. True
14. True
15. False
16. True
17. True
18. False
19. True
20. True

Cardiovascular Fitness

Identification (pp. 234-236)

1. high blood pressure
2. heart rate
3. cholesterol
4. cardiovascular disease
5. arteries
6. circulatory system
7. cardiovascular fitness
8. recovery heart rate
9. respiratory system
10. ventricles
11. veins
12. carotid artery
13. atrium
14. pulse
15. cardiac
16. coronary arteries
17. cardiovascular
18. aerobic exercise
19. radial artery
20. valves
21. heart attack
22. carbon dioxide
23. aerobic
24. aorta
25. blood pressure
26. risk factor
27. target heart rate zone
28. training effect
29. capillaries
30. cool-down
31. anaerobic
32. maximum heart rate
33. anaerobic

Solve (pp. 238-239)


RATE
VENTRICLES
AORTA
CARDIAC
PULSE
CHOLESTEROL
ATRIUM
ANAEROBIC
CAPILLARIES
ARTERIES
VEINS
CARDIOVASCULAR
CORONARY
AEROBIC
VALVES

Quiz (pp. 43-46 TG)

Multiple Choice

1. d.
2. b.
3. d.
4. a.
5. d.
6. c.
7. d.
8. b.
9. c.
10. d.

True or False

11. True
12. False
13. True
14. True
15. False
16. True
17. True
18. False
19. True
20. True

Consumer Health Issues

Overview

Have you ever been tempted to buy a product that promises bulging biceps, a flat stomach, thinner thighs, or endless energy?

Before you buy any product to improve your fitness, become informed. Fat-fighting advertisements bombard us with the "sure cure" to the problem of obesity. Hucksters and quacks often claim that just by ordering the latest "proven method" for fighting flab, one can have a "toned, lean, and muscular body" overnight. Protect yourself from being ripped off by understanding some basics on how the body responds to exercise. Do not let someone sell you worthless products by trying to convince you that you can improve yourself with their product in no time at all. Do not be taken in by products that claim to do the work for you or promise miraculous results. Learn to be a smart *consumer.* Do not buy worthless products.

As interest in fitness and health has increased, so has the number of health clubs. Your decision on whether to join a club and how to select one should depend on many factors. For example, what does a membership cost and what are your personal needs or desires? Get answers to the *Health Club Questionnaire* and inspect the club before you sign a contract to become a member.

Top performance cannot be achieved through pills, powders, or drinks, but only through a rigorous training schedule. Your energy needs are best filled through a variety of foods and adequate fluid intake. There's only one way to improve your performance: You have to train hard and regularly, and eat properly.

Suggested Activities

Pre-Test: ***What do you know?*** Before starting this unit, have students take the pre-test on fitness fallacies. All of the statements are false. Discuss with students any statements they think are true. Explain what a *fallacy* is and how the media exploits fallacies through advertisements. False claims in advertising often lead people to purchase worthless products. Discuss ways of judging a product for its value and worth.

Consumer Health Issues

Bulletin Board. Construct a bulletin board entitled "Consumer Awareness—Buyer Beware." Include advertisements that students have clipped out of newspapers and various magazines on crash diets, weight-reduction techniques, reducing devices or machines, pills, etc. Discuss potential harmful effects, misleading claims, nutritional deficiencies, rip offs, etc.

Common Gimmicks and Gadgets. Divide students into groups and have them develop a list of current gimmicks and gadgets that promise to reduce fat or build muscle quickly. Have them explain why the product may be worthless or a rip off.

Role-Playing. Divide students into groups. Have students create a fitness product. They may choose to create either a legitimate product or an unrealistic one that promises quick results. Then have them create a commercial for their fitness product. They will present their commercial to the class, trying to persuade other students to purchase the product. Have students make a poster of the product and create a slogan for it. For example, "Lose 10 Pounds in One Week!" or "Gain Bigger Muscles in Just Five Days!"

Common Fad Diets. Discuss the various methods people use to lose weight. Stress why dieting without exercise is not successful for long-term weight loss. Have students research current diets on the market. Each student will choose a particular fad diet (e.g., Weight Watchers, Physician's Weight Loss Centers, Shaklee, Jenny Craig) and gather information on the program. Students will present to class a description of the diet as well as the various claims it makes, etc.

Athletic Shoes. Students will research various brands of athletic shoes on the market and prepare a report on the following: how they are made, advantages of different brands, cost of each brand, why different shoes are sold and marketed for different activities, what brands sell the most shoes, etc.

Fact/Fallacy. Divide students into groups. Assign each group a fitness fallacy from the text. Have them create an advertisement that attempts to persuade other students that the fallacy is true. Explain to students that this lesson is to show how we are often misled into believing claims that are actually fallacies.

Consumer Health Issues

Active/Passive Exercise Equipment. In small groups have students devise a list of five examples (not found in the text) of passive exercise equipment and of active exercise equipment. They will then explain why some of these products are valuable or why some are worthless. Each group will report their lists and explanations to the class. Make two columns on the chalkboard and list all answers under the appropriate column.

Critique of Exercise Books/Videos/ Products. Have students bring to class either an exercise book, exercise video, or an exercise device. Through a class effort decide whether each is a valid product or a gimmick.

Pros and Cons of Vitamin Supplements. Discuss the pros and cons of using vitamin supplements. Include the benefits and possible dangers. Have students research the topic and write a report concerning the current issues and beliefs. Include also ergogenic aids such as steroids, stimulants, and many of the body building supplements found in health food stores.

STANDARDS	10.0	10.01 10.02 10.03 10.04

Consumer Health Issues

Fill in the Blanks

Use the word list below to complete each statement. Write the correct answer on each line.

exercise equipment
passive exercise
metabolic rate
fluids
fat
stimulants
steroids
spot reduction
testosterone
diuretics

1. Many exercise gimmicks or gadgets promise weight loss; however, the user does not lose fat but instead loses valuable ____________________ from the body's tissues.

2. Some fad diets will actually slow your ____________________ and cause you to burn calories at a slower rate than you normally do.

3. Drugs that some people take to increase their alertness and delay fatigue are called ____________________; these drugs cause a dangerous increase in heart rate and blood pressure.

4. You cannot improve your fitness level by using ____________________ equipment; any device that does the work for you cannot help you build fitness or lose weight.

5. Females will not develop big, bulky muscles from weight training because they do not have enough of the male sex hormone, ____________________, which stimulates muscle growth.

6. Active ____________________ helps you improve your fitness level by requiring you to use muscle power and aerobic energy.

7. Drugs that cause your body to eliminate fluids are called ____________________. The weight you lose from taking these drugs will quickly be replaced as you drink fluids.

8. Anabolic ____________________ are very dangerous drugs that are taken to increase muscle mass. These drugs are illegal unless prescribed by a doctor.

9. You know you are hearing quackery if an ad claims a product can accomplish ____________________, or take fat off of specific areas of your body.

10. There are no pills or potions that can burn ____________________ off your body, as some dishonest advertisements claim.

Consumer Health Issues

Multiple Choice

Circle the letter of each correct answer.

11. During our teen years we may be taken in by __________ that promises a quick way to look more attractive.

    a. consumers
    b. quackery
    c. stimulants
    d. cellulite

12. Most celebrities and sports stars endorse health, fitness, and weight loss products because they __________ .

    a. believe in the products
    b. invented and designed the products
    c. are being paid
    d. want to serve the public

13. Many of us have bought a particular health and fitness product because we wanted to __________ .

    a. "fit in" with our peers
    b. buy a name brand
    c. identify with a star athlete
    d. all of the above

14. Beware of ads that promise __________ .

    a. to "burn several inches off" various body parts
    b. "to melt off fat effortlessly"
    c. nothing
    d. both a. and b.

15. Techniques that will help you separate fact from fallacy include __________.

    a. developing a questioning attitude about the claims made in ads
    b. buying an item that sounds too good to be true
    c. seeking advice from professionals that you trust to help you analyze the claims being made
    d. both a. and c.

16. Some examples of passive exercise equipment include __________.

    a. rowing machines and stationary bicycles
    b. treadmills and stairsteppers
    c. electric bicycles and electric stimulators
    d. weight machines and treadmills

17. There are __________ quick-fix products for healthy and permanent weight loss.

    a. no
    b. a few
    c. many
    d. four universal

18. Anabolic steroids can cause __________ in males.

    a. stunted growth
    b. baldness
    c. shrunken testicles
    d. all of the above

19. Anabolic steroids can cause __________ in females.

    a. breast shrinkage
    b. facial hair
    c. deepened voice
    d. all of the above

Consumer Health Issues

20. You should check the __________ before joining a health club.

   a. equipment and facility
   b. qualifications of the instructors
   c. contract
   d. all of the above

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 21. If the claims for a product sound too good to be true, they probably are.

__________ 22. Quacks often encourage people to distrust health professionals such as doctors and registered dietitians.

__________ 23. Most people who are overweight have a hormone problem.

__________ 24. Most people who are overweight have poor nutritional and exercise habits.

__________ 25. Top performance cannot be achieved through pills, powders, or drinks, but only through a rigorous training schedule and healthy diet.

Consumer Health Issues

True or False Pre-Test (pp. 246-247)

1. False
2. False
3. False
4. False
5. False
6. False
7. False
8. False
9. False
10. False
11. False

True or False (pp. 275-276)

1. False
2. False
3. False
4. False
5. False
6. False
7. True
8. True
9. True
10. False
11. True
12. False
13. True
14. False
15. True
16. False
17. False
18. True
19. True
20. False
21. True

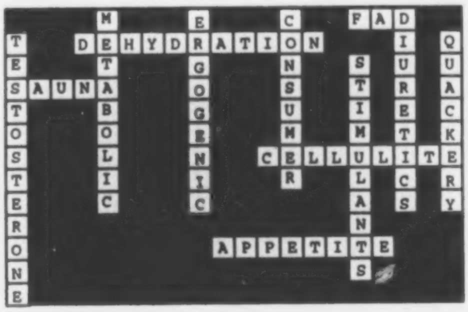
Multiple Choice (pp. 277-279)

1. d.
2. d.
3. c.
4. d.
5. b.
6. c.
7. a.
8. c.
9. d.
10. b.
11. a.
12. c.
13. c.
14. b.
15. b.

Identification (pp. 280-281)

1. diuretics
2. dehydration
3. sauna
4. anabolic steroids
5. appetite suppresants
6. metabolic rate
7. testosterone
8. cellulite
9. thyroid hormones
10. fad
11. fad diet
12. quackery
13. passive exercise equipment
14. ergogenic aids
15. active exercise equipment
16. consumer
17. stimulants
18. spot reduction

Solve (p. 282)


METABOLIC
DEHYDRATION
ERGOGENIC
CONSUMER
FAD
DIURETICS
QUACKERY
TESTOSTERONE
SAUNA
STIMULANTS
CELLULITE
APPETITE

Quiz (pp. 53-57 TG)

Fill in the Blanks

1. fluids
2. metabolic rate
3. stimulants
4. passive exercise
5. testosterone
6. exercise equipment
7. diuretics
8. steroids
9. spot reduction
10. fat

Multiple Choice

11. b.
12. c.
13. d.
14. d.
15. d.
16. c.
17. a.
18. d
19. d.
20. d.

True or False

21. True
22. True
23. False
24. True
25. True

Personal Fitness Program

Overview

A complete personal fitness program involves all of the health-related components of physical fitness. By itself, no single activity or exercise can help you accomplish flexibility, cardiovascular fitness, muscular strength, muscular endurance, or a healthy body composition. You must include a variety of activities in your exercise program to develop all areas of physical fitness. You also must build a healthy lifestyle.

Strength training and aerobic conditioning should be the primary focus of your personal fitness program. Strength training will lift and tone the muscles. Aerobic conditioning will strengthen the heart and decrease the overall amount of body fat. Flexibility can be developed and improved by stretching before and after any exercise. Proper nutrition and a well-rounded exercise program will help improve your body composition.

There are important steps to take in designing your personal fitness program. They include evaluating your health-related fitness components, setting personal goals, selecting appropriate activities, applying the F.I.T. formula, tracking your progress, and periodically re-evaluating your fitness level.

Motivation is important to include in your personal fitness program to help you continue with your exercise program. All of us need encouragement to help us stay on a workout schedule and eat nutritiously.

The positive effects of exercise occur as a result of regular and consistent efforts. You must use energy to gain energy. Treat your body well and feel the benefits. Become fit so you can enjoy a full and long life!

Suggested Activities

Bulletin Board. Construct a bulletin board with the theme of "Healthy Lifestyles." Have students design representations of the various aspects of total fitness and wellness for the board. Pictures from magazines and other sources can be used to develop the theme.

Medical Exam. When discussing considerations and guidelines to consider before beginning an exercise program, explain to students that rarely would they need a medical exam before starting an exercise program. However, they should be aware that their parents or other adults and individuals with a past history of disease, illness, or injury should have an exam.

Selecting Activities. Emphasize lifestyle choices. Students should be encouraged to select activities they enjoy and try to avoid influences from peers and friends. Discuss the importance of using different activities to develop a specific component or body part (cross training). Explain the advantage of choosing activities that can be done anytime and anywhere. Instruct students to use the questionnaire on pages 291-292 to help them determine which activities they would like to include in their personal fitness program. Their selection should also be based upon results of the physical fitness profile.

Setting Goals. Divide students into small groups and have them list on the chalkboard the benefits or positive outcomes to accomplishing certain health-related goals. Outcomes might include an improved appearance, an improved self-concept, improved muscular strength and endurance in the upper body, decreased body fat in the hips, thighs, buttocks, and abdominal region, improved stamina, etc. Advise and guide students in the goal-setting process. Help them establish realistic short-term and long-term goals.

Motivational Strategies. Share with the students how motivational strategies can help them stick with their exercise programs. Organize students into groups to generate a list of reasons why people quit (boredom, time, lack of commitment, etc.) and also ways to avoid and counteract those reasons. Ways to help students maintain their programs might include having a support group; participating in a variety of activities; monitoring their progress; exercising with a friend; and periodically re-evaluating their fitness and body composition.

Attitude. Explain to students how attitudes effect motivation and perserverance. Have students take the "Attitude Profile." Share answers orally as a class. Illustrate how becoming aware of their own habits and attitudes can help them to change an unproductive behavior or lifestyle pattern. Use personal or familiar examples.

Behavioral Contract. Explain to the students the purpose of a behavioral contract. Discuss how a contract with themselves can increase the chances of maintaining an exercise program. A support person, such as a parent, can also sign the contract to verify and help encourage the students to uphold the contract.

Designing a Personal Fitness Program. Instruct students to identify the health-related components in which they need the most improvement. Record all initial test scores in the activity "Physical Fitness/Body Composition Profile."

As a class, design a sample personal fitness plan. Discuss all implications and steps involved. To spark their creative thinking, ask the students questions: What activities require strong arms or upper body? In what activities do you need to have strong leg muscles? etc. Refer to the *Physical Activity Ratings* chart on page 290. Suggest how various sports can supplement traditional physical fitness activities in a personal fitness program.

Spell out the importance of being specific about how to apply intensity and how long to exercise each time. Ask students how they are going to monitor short-term goals. Explain how a personal fitness program can be changed from time to time depending upon progress made, effectiveness, satisfaction, and enjoyment.

STANDARDS

3.0	3.01	
4.0	4.01	
5.0	5.03	5.04
8.0	8.01	
9.0	9.02 9.04	9.03
10.0	10.01	
11.0	11.01 11.03 11.06	11.02 11.04
16.0	16.01	16.03

Personal Fitness

Fill in the Blanks

Use the word list below to complete the following statements. Write the correct word on each line.

flexibility
lean body mass
passive exercise
components
body composition
skill-related
ideal body
overfat
diuretics
quackery
spot reduce
physical fitness
stretching
joints
illegal
movements
sedentary

1. When your heart, blood vessels, lungs, and muscles all function efficiently, you have achieved ______________________.

2. Healthy lifestyle behaviors include participating in regular exercise, good nutritional habits, and not using tobacco or ______________________ drugs.

3. Most Americans are not fit. They live a ______________________ lifestyle—they spend their time sitting rather than being active and exercising.

4. Cardiovascular fitness, muscular strength, muscular endurance, flexibility, and body composition are health-related fitness ______________________.

5. Agility, balance, coordination, power, reaction time, and speed are ______________________ fitness components.

6. More important to your health than how much you weigh is the amount of fat on your body compared to the amount of ____________________ on your body.

7. This comparison of the flabby tissue on your body to the toned tissue on your body is called your ____________________ .

8. Your ____________________ weight is how much you would weigh if your body-fat percentage were in the healthy range.

9. If you have more fat on your body than you should, your body is ____________________ .

10. Your body can no longer move or bend the way it once could when you lose your ____________________ .

11. People who can do splits and work their bodies into pretzel-like shapes have muscles and ____________________ that can move through a full range of motion.

12. One way to improve your range of motion is by ____________________ , or lengthening, your muscles.

13. Your muscles are groups of tissue that surround bones and produce physical ____________________ .

14. Unfortunately, some of the makers of health and fitness products use ____________________, or false claims, to sell their goods.

15. One type of product that can*not* help us improve our fitness is ____________________ equipment. This type of equipment does the work for us and does not exercise our bodies.

16. Drugs that cause us to eliminate fluids are called ____________________. These drugs cause our bodies to lose valuable life-sustaining substances.

17. A common false claim made in dishonest advertising is that a product or pill can ____________________, or remove fat from a specific area of the body.

Matching

Match the **term** *in the left-hand column with its* **definition** *in the right-hand column. Write the letter of the correct answer on each line.*

	Term	Definition
_____	18. muscular fitness	A. the damage or death of part of the heart muscle
_____	19. muscular endurance	B. firm and defined muscles
_____	20. muscular strength	C. exercises performed against resistance; also called *resistance training*
_____	21. muscle tone	D. includes the development of both muscular strength and muscular endurance
_____	22. weight training	E. rhythmic and continuous activities that require oxygen for energy
_____	23. cardiovascular fitness	F. the body's ability to deliver oxygen to working muscles
_____	24. cardiovascular system	G. the ability of a muscle to exert maximal force in a single effort
_____	25. arteries	H. system that circulates blood throughout the body; also called *circulatory system*
_____	26. heart attack	I. the ability of a muscle to repeat a movement over a period of time without tiring
_____	27. aerobic exercise	J. blood vessels that carry oxygen-rich blood to the body's muscles

Fill in the Blanks

Use the word list below to complete the following statements. Write the correct word on each line.

strain
specificity
doctor
overload
wam-up
bulimia
cool-down
stop
exercise

28. The only way to progress in your fitness program is to use the ____________________ principle.

29. Lifting weights to increase arm strength is an example of a training principle called ____________________ .

30. In the past we believed in the saying "no pain, no gain." However, we now believe in the saying "train, don't ____________________ ."

31. If you feel pain while exercising, you should slow down or ____________________ .

32. Before you start your activity, you should do a five- to ten-minute ____________________ .

33. Similarly, at the end of your workout, you should do a five- to ten-minute ____________________ .

34. To improve your body composition, you should eat a low-fat diet and ____________________ .

35. Eating disorders include anorexia nervosa and

__________________________ . Anyone who suffers from these

disorders should see a __________________________ .

Multiple Choice

Circle the letter of each correct answer.

36. Developing your flexibility and doing regular stretching

_____________ .

a. lowers your risk for back pain
b. increases relaxation and reduces muscle tension
c. helps prevent injuries
d. all of the above

37. There are four different methods to improve your flexibility. The safest and most effective method for most people is _____________ . To use this method, you move to a point of tension and hold that position.

a. ballistic stretching
b. dynamic stretching
c. passive stretching
d. static stretching

38. A type of stretching that is dangerous and should only be done by advanced athletes is _____________ . In this method, you bob or bounce past the stretching point of a muscle.

a. passive stretching
b. ballistic stretching
c. dynamic stretching
d. static stretching

39. Anyone can begin a flexibility program. But safe stretching follows guidelines. These safe-stretching guidelines include __________ .

    a. always doing a warm-up
    b. stretching to a point of tension, not pain
    c. relaxing into each stretch
    d. all of the above

40. A lack of flexibility can cause __________ .

    a. bad posture
    b. difficulty moving your body in normal, daily activities
    c. athletic injuries
    d. all of the above

41. Isometric, isotonic, and isokinetic exercises work __________ against resistance to improve fitness.

    a. bones
    b. muscles
    c. joints
    d. skin

42. In isometric exercises, the muscle contracts when pressed against an immovable object. An example of an isometric exercise is __________ .

    a. using free weights
    b. using specially designed weight machines
    c. squeezing a tennis ball as hard as you can for six seconds
    d. none of the above

43. Isotonic exercises include doing calisthenics, lifting free weights, and using weight machines. Examples of this form of exercise include __________ .

    a. doing push-ups and abdominal curl-ups
    b. squeezing a tennis ball for six seconds
    c. playing basketball
    d. a. and b.

44. Skeletal muscles are composed of two types of muscle fibers. These two types are fast-twitch muscle fibers and slow-twitch muscle fibers. Fast-twitch muscle fibers contract quickly and are useful for ____________ .

    a. endurance activities, such as long-distance running
    b. activities that use oxygen, such as slow jogging
    c. short, intense bursts of action, such as sprinting
    d. all of the above

45. Slow-twitch muscle fibers contract slowly and are useful for ____________ .

    a. endurance activities, such as long-distance running
    b. activities that do not use oxygen, such as isometric exercises
    c. short, intense bursts of action, such as sprinting
    d. all of the above

Identification

Put a check (√) next to those guidelines that should be followed during muscle fitness exercises.

__________ 46. Strain when you lift weights—remember: "No pain, no gain."

__________ 47. Begin with a warm-up to prepare your body for more vigorous activity.

__________ 48. Occasional horse play is OK when lifting weights. Horse play will help you keep your workouts relaxed and fun.

__________ 49. Hold your breath when you lift a weight. If you breathe, you may become dizzy.

__________ 50. Use a spotter. A spotter will help you count, help you lift with proper form, and help you lower a weight should you become fatigued.

Put a check (√) next to those guidelines that should be followed during flexibility exercises.

__________ 51. Breathe naturally throughout all stretching exercises.

__________ 52. Lock your knees and joints during a stretch to fully lengthen a muscle.

__________ 53. Stretch no more than once or twice a week, or you may tear your muscles.

__________ 54. Avoid fast stretching and bouncing while stretching.

__________ 55. Hold the position of each stretch for no more than 10 seconds.

Put a check (√) next to those guidelines that should be followed when buying health, fitness, or weight-loss products.

__________ 56. Always listen to athletes who are selling fitness products; they would not sell a product if they did not truly believe in it.

__________ 57. Any claim that sounds too good to be true probably is.

__________ 58. Beware of ads that promise "instant success" or "quick and easy results without diet or exercise."

__________ 59. Body wraps and other products that cause you to lose fluids are a good method for losing fat.

__________ 60. Diets that severely restrict the calories in your diet may actually lower your metabolic rate and cause you to gain weight in the future.

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 61. You cannot control any of the major risk factors for heart disease.

__________ 62. Monitor your heart rate before, during, and after exercise so that you can find your own healthy rate of exercise.

__________ 63. Exercises that improve the condition of your heart and lungs must raise your heart and breathing rate.

__________ 64. Drinking fluids during aerobic exercise will not help replace the fluids you lose—so wait and drink only after you are done exercising.

__________ 65. Feeling dizzy, weak, lightheaded, and excessively tired are all possible signs of heat exhaustion.

Personal Fitness Program

Short Answer (pp. 321-322)

1. body composition; flexibility; muscular strength; muscular endurance; cardiovascular fitness
2. evaluation of health-related components; setting personal goals; selecting appropriate activities; applying the F.I.T. formula (training principles); tracking your progress/periodic assessments
3. Answers may include: start slowly; listen to your body; make it enjoyable; gain health/fitness knowledge; exercise with a friend; keep a positive attitude; schedule exercise; join a club; keep a balanced prospective; list possible obstacles
4. to check if progress is being made; see if goals are being met; to see areas of fitness that are improving or not improving
5. keep track of progress; for motivation; help in setting new goals
6. Answers will vary, may include: improvement quick in some areas, slow in others; too difficult or too easy; boring; not convenient

True or False (pp. 323-324)

1. False
2. True
3. False
4. True
5. False
6. False
7. True
8. True
9. False
10. False
11. True
12. False
13. True
14. True
15. False
16. True
17. True
18. True
19. False
20. True

Multiple Choice (pp. 325-326)

1. b.
2. d.
3. d.
4. c.
5. b.
6. b.
7. c.
8. c.
9. d.
10. c.

Identification (pp. 327-328)

1. a) bench press
   b) chest
2. a) biceps curl
   b) biceps
3. a) flexed-arm hang; pull-ups
   b) arms, shoulders, and back
4. a) lat pulldown
   b) large back muscles
5. a) wall push aways
   b) chest
6. a) curl-ups
   b) abdominal muscles
7. a) modified push-ups
   b) upper body; chest
8. a) knee extensions
   b) front of thighs

Final Examination (pp. 65-74 TG)

Fill in the Blanks

1. physical fitness
2. illegal
3. sedentary
4. components
5. skill-related
6. lean body mass
7. body composition
8. ideal body
9. overfat
10. flexibility
11. joints
12. stretching
13. movements
14. quackery
15. passive exercise
16. diuretics
17. spot reduce

Matching

18. D.
19. I.
20. G.
21. B.
22. C.
23. F.
24. H.
25. J.
26. A.
27. E.

Fill in the Blanks

28. overload
29. specificity
30. strain
31. stop
32. warm-up
33. cool-down
34. exercise
35. bulimia; doctor

Multiple Choice

36. d.
37. d.
38. b.
39. d.
40. d.
41. b.
42. c.
43. a.
44. c.
45. a.

Identification

46.
47. √
48.
49.
50. √
51. √
52.
53.
54. √
55.
56.
57. √
58. √
59.
60. √

True or False

61. False
62. True
63. True
64. False
65. True

Appendices

Appendix A

Correlation to Student Perfomance Standards
Course Number: 1501300

Intended Outcome	Student Performance Standard The student will:		Addressed	Not Addressed
1. Understand and apply safety practices.	1.01	Describe and demonstrate safety procedures which should be followed when engaging in flexibility, cardiovascular, muscular strength, and muscular endurance activities.	1, 3, 4, 5	
	1.02	Explain methods of maintaining proper fluid balance during physical activity.	1, 5	
	1.03	Identify signs of heat illnesses caused by fluid loss.	1	
	1.04	Identify precautions to be taken when exercising in extreme weather and/or environmental conditions.	1, 5	
2. Assess individual fitness levels.	2.01	Identify methods of determining level of flexibility.	3	
	2.02	Identify methods of determining level of cardiovascular fitness.	5	
	2.03	Identify methods of determining level of muscular strength and muscular endurance.	4	
	2.04	Identify methods of determining estimated percent of body fat.	2	
	2.05	Define ideal body weight.	2	
	2.06	Describe at least one method of determining level of flexibility.	3	
	2.07	Describe at least one method of determining level of cardiovascular fitness.	5	
	2.08	Describe at least one method of determining level of muscular strength and muscular endurance.	4	
	2.09	Describe at least one method of determining estimated percent of body fat.	2	
	2.10	Describe at least one method of determining ideal body weight.	2	
3. Understand and interpret health-related fitness assessment results.	3.01	Identify and interpret his/her level of flexibility, cardiovascular fitness, muscular stength, muscular endurance, and percentage of body fat in relation to criterion-referenced health fitness standards.	2, 3, 4, 5, 7	

Appendix A

Correlation to Student Performance Standards
Course Number: 1501300

Intended Outcome	Student Performance Standard The student will:		Addressed	Not Addressed
4. Set specific and realistic health-related goals.	4.01	Set short-term, intermediate, and long-term goals based on health-related fitness assessment results.	3, 4, 5, 7	
5. Understand the components of physical fitness.	5.01	Define physical fitness.	1	
	5.02	Identify and describe each of the health-related components of physical fitness.	1, 2, 3, 4, 5, 7	
	5.03	Identify and describe each of the skill-related components of physical fitness.	1, 7	
	5.04	Compare and differentiate between health-related fitness and skill-related fitness.	1, 7	
6. Understand health problems associated with inadequate fitness levels.	6.01	Identify problems associated with inadequate flexibility.	3	
	6.02	Identify health-related problems associated with inadequate cardiovascular fitness.	1, 5	
	6.03	Identify health-related problems associated with inadequate muscular strength and muscular endurance.	4	
	6.04	Identify health-related problems associated with an abnormal percentage of body fat.	1, 2	
7. Understand the relationship between physical fitness activities and stress.	7.01	Define stress.	1	
	7.02	Identify the different types of stress.	1	
	7.03	Identify the positive and negative effects of stress.	1	
	7.04	Identify specific health problems that may be caused or affected by negative stress.	1	
	7.05	Identify stressful events in daily life.	1	
	7.06	Identify positive coping strategies.	1	
	7.07	Identify negative coping strategies.	1	
	7.08	Identify techniques of progressive relaxation.	1	
	7.09	Describe the benefits of vigorous and nonvigorous physical activities to stress diversion.	1	

Appendix A

Correlation to Student Perfomance Standards
Course Number: 1501300

Intended Outcome	Student Performance Standard The student will:	Addressed	Not Addressed
8. Evaluate physical activities in terms of fitness value.	8.01 Identify the contributions of physical activities to the development of the health-related components of physical fitness.	3, 4, 5, 7	
	8.02 Identify the contributions of physical activities to stress diversion.	1	
9. Select from a variety of activities which will improve health-related physical fitness.	9.01 Identify a variety of static and dynamic stretching exercises which promote flexibility.	1, 3	
	9.02 Identify a variety of aerobic activities which promote cardiovascular fitness.	1, 5, 7	
	9.03 Identify a variety of activities which promote muscular strength and muscular endurance.	1, 4, 7	
	9.04 Identify a variety of activities which promote ideal body weight.	2, 7	
	9.05 Identify a variety of activities which promote stress diversion.	1	
10. Design a fitness program that meets individual needs and interests.	10.01 Design a personal fitness program that will lead to or maintain an optimal level of health-related fitness based on an understanding of training principles, individual fitness and skill level, personal goals, and availability of resources.	7	
11. Understand and apply correct biomechanical and physiological principles related to exercise and training.	11.01 Identify factors one should consider before engaging in a physical fitness program.	1, 3, 4, 5, 7	
	11.02 Describe the importance of a warm-up/cool-down period when participating in physical activity.	1, 3, 4, 5, 7	
	11.03 Describe the training principles of overload, progression, and specificity (frequency, intensity, duration).	1, 3, 4, 5, 7	
	11.04 Describe how flexibility is improved through application of training principles.	3, 7	
	11.05 Identify the biomechanical principles related to flexibility activities.	3	
	11.06 Describe how cardiovascular fitness is improved through application of the training principles.	5, 7	
	11.07 Identify the biomechanical principles related to cardiovascular activities.	5	

Correlation to Student Performance Standards
Course Number: 1501300

Intended Outcome	Student Performance Standard The student will:	Addressed	Not Addressed
(continued) 11. Understand and apply correct biomechanical and physiological principles related to exercise and training.	11.08 Describe how muscular strength and muscular endurance are improved through application of the training principles.	5, 7	
	11.09 Identify the biomechanical principles related to muscular strength and muscular endurance activities.	4	
	11.10 Determine the range of target heart rate zone.	5	
12. Exhibit an improved level of health-related physical fitness.	12.01 Demonstrate an improvement of the health-related components of physical fitness.	7	
13. Assess individual lifestyles.	13.01 Identify the primary risk factors associated with disease, disability, and premature death.	1, 4, 5	
	13.02 Differentiate between changeable and unchangeable risk factors.	5	
	13.03 Identify risk factors that need to be reduced or modified to pursue a healthy lifestyle.	5	
	13.04 Describe the relationship between health and fitness and lifestyle.	1, 5	
14. Understand sound nutritional practices related to physical fitness.	14.01 Identify fact and fallacies associated with nutritional practices related to physical activity.	2	
	14.02 Explain the use of exercise as a method of weight control.	2, 7	
	14.03 Explain the use of diet as a method of weight control.	2, 7	
	14.04 Explain the combined use of exercise and diet as a method of weight control.	2, 7	

Appendix A

Correlation to Student Perfomance Standards
Course Number: 1501300

Intended Outcome	Student Performance Standard The student will:		Addressed	Not Addressed
15. Understand consumer issues related to physical fitness.	15.01	Differentiate among fact, fad, quackery, and fallacies as related to fitness.	4, 6	
	15.02	Determine the validity of marketing claims promoting fitness products and services.	6	
	15.03	Identify consumer issues related to selection, purchase, care, and maintenance of personal fitness equipment.	6	
	15.04	Identify the dangers associated with the use of performance-altering drugs (e.g. steroids).	4, 6	
16. Understand the values derived from participation in physical fitness activities.	16.01	Identify attitudes that people have towards exercise and physical activities.	7	
	16.02	Identify reasons why fitness should be a compelling state and national concern.	1	
	16.03	Describe the benefits of participating in a regular personal fitness program.	1, 3, 4, 5, 7	
	16.04	Describe the benefits of achieving optimal fitness.	1	

Appendix B

Multimedia Bibliography

Films

Fit to Be You: Muscles. 11 min. Walt Disney.

Fitness for Wellness. 11 min. AIMS. 1987.

How to Get Fit. 13 min. Walt Disney. 1983.

Physical Fitness and Good Health. 24 min. Walt Disney.

Why Be Physically Fit? 12 min. Walt Disney.

Video Cassettes

Downfall: Sports and Drugs. (V86-F001D-VHS.) 28 min. Maryville, TN: National School Products.

Fitness Fun. 15 min., Deerfield, IL: Coronet, 1982.

Inside/Out: The Story of Food and Fitness. (V18-31384-VHS.) 36 min. Maryville, TN: National School Products.

Physical Fitness: It Can Save Your Life. (3575-065-VHS.) 23 min. Chicago: Britannica Educational Corporation.

The Steroid Trap: Turning Winners into Losers. (V18-60136-VHS.) 40 min. Maryville, TN: National School Products.

Laser Videodiscs

Fast Food: What's in It for You. 30 min. (CAV, 1 side) Seattle, WA: Laser Learning Technologies.

Appendix C

Multimedia Sources

AIMS Media
9710 DeSoto Avenue
Chatsworth, CA 91311-4409

Encyclopedia Britannica Films
310 S. Michigan Avenue
Chicago, IL 60604

Laser Learning Technologies
3114 37th Place South
Seattle, WA 98144

National School Products
101 East Broadway
Maryville, TN 37801-2498

Disney/Coronet/Centron
108 Wilmot Road
Deerfield, IL 60202

Appendix D

Help Agencies

American Aneroxia and Bulimia
Association
133 Cedar Lane
Teaneck, NJ 07666
201-836-1800

American Cancer Society
National Headquarters
1599 Clifton Rd. NE
Atlanta, GA 30329

American College of Sports Medicine
P.O. Box 1440
Indianapolis, IN 46206
317-637-9200

American Dietetic Association
216 W. Jackson Blvd., Suite 800
Chicago, IL 60606-6995
1-800-877-1600

American Heart Association
National Center
7320 Greenville Avenue
Dallas, TX 75231
214-750-5300

American Medical Association
535 N. Dearborn Street
Chicago, IL 60610
1-800-621-8335

American Running and Fitness
Association
2420 K Street
Washington, DC 20037

Anorexia Nervosa and Related
Eating Disorders
P.O. Box 5102
Eugene, OR 97045
503-344-1144

Bureau of Health Professions
Health Resources and Services
Administration
Parklawn Bldg., Room 8A-03
5600 Fishers Lane
Rockville, MD 20857
301-443-2060

Centers for Disease Control
Office of Public Affairs
Dept. of Health and Human Services
1600 Clifton Rd, NE
Atlanta, GA 30333
404-329-3534

Consumer Information Center
General Services Administration
Pueblo, CO 81009
719-948-3334

Harvard Medical School Health Letter
Department of Continuing Education
25 Shattuck Street
Boston, MS 02115

National Dairy Council
111 North Canal Street
Chicago, IL 60606

Nutrition Action Health Letter
Center for Science in the Public Interest
1875 Connecticut Avenue., NW, Suite 300
Washington, DC 20009-5728

Project LEAN
Low-Fat Eating for America Now
P.O. Box 8049
Young America, MN 44351-8049

Appendix D

Office of Disease Prevention and
Health Promotion
P.O. Box 1133
Washington, DC 20013-1133
1-800-336-4797

Office of Prevention, Education and Control
The National Heart, Lung, and Blood
Institute
Bethesda, MD 20892
301-496-0054

President's Council on Physical
Fitness and Sports
701 Pennsylvania Avenue NW, Suite 250
Washington, DC 20004
202-272-3421

U.S. Department of Agriculture
Human Nutrition Research Branch
14th Street and Independence Ave. SW
Washington, DC 20250

U.S. Public Health Service
Public Inquiries Branch
200 Independence Ave. SW
Washington, DC 20201

Appendix E

References

AAU Physical Fitness Program, 1993-94. Testing Packet.

Aerobics Fitness Association of America. *Fitness: Theory, and Practice.* Boston: Reebok UP, 1993.

Alter, Michael J. *Sports Stretch.* Champaign, IL: Leisure Press, 1990.

American Council on Exercise. *Personal Trainer Manual.* Boston: Reebok UP, 1991.

American Heart Association. *Exercise and Your Heart.* Dallas: American Heart Association, 1993.

Anderson, Bob, Ed Burke, and Bill Pearl. *Getting in Shape.* Bolinas, CA: Shelter Publications, 1994.

Bailey, Covert. *Smart Exercise.* Boston: Houghton Mifflin, 1994.

Baechle, Thomas R., and Barney Groves. *Weight Training: Steps to Success.* Champaign, IL: Leisure Press, 1992.

Clark, Nancy. *Sports Nutrition Guidebook.* Champaign, IL: Leisure Press, 1990.

Cooper, Kenneth. *Kid Fitness: The Complete Shape-Up Program from Birth through High School.* New York: Bantam, 1991.

Greenberg, Jerrold, and Robert Gold. *Health.* New York: Holt, 1994.

Howley, Edward T., and B. Don Franks. *Health and Fitness Instructor's Handbook.* Champaign, IL: Human Kinetics Books, 1992.

Moore, Clancy, and Roberta Stokes. *Personal Fitness and You.* Winston-Salem, NC: Hunter Textbooks, 1986.

Williams, Charles S., et. al. *Personal Fitness: Looking Good, Feeling Good.* Dubuque, IA: Kendall/Hunt, 1986.

Addendum

Personal Fitness: Course No. 1501300
Correlation to Sunshine State Standards

Standards

1. Apply knowledge of safety practices to participation in activities that promote physical fitness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.B.2.4.1	Know risks and safety factors that may affect physical activity throughout life.	1, 3, 4, 5	
PE.C.1.4.2	Know how to modify games and activities to allow for participation of students with special needs (e.g., physical disabilities).	not addressed	

Standards

2. Demonstrate understanding of the components of physical fitness.

	Addressed in Unit(s)	Addressed in Class on Date(s)
	1, 2, 3, 4, 5, 6, 7	

Standards

3. Apply knowledge of technology to facilitate personal fitness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.B.1.4.3	Use technology to assess, enhance, and maintain fitness and skills.	2	

Standards

4. Demonstrate understanding of health problems associated with inadequate fitness levels.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.1	Know that physical activity reduces certain health risk factors.	1, 2, 3, 4, 5, 7	
PE.A.3.4.4	Know the role of physical activity in the prevention of disease and the reduction of health-care costs.	1, 4, 5	

Personal Fitness: Course No. 1501300
Correlation to Sunshine State Standards

Standards

5. Evaluate and select physical activities according to fitness value.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.5	Evaluate the effectiveness and use of community resources related to fitness.	6	

Standards

6. Design and implement a fitness program that meets individual needs and interests.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.2.4.3	Know how to evaluate one's own skilled performances.	2, 3, 4, 5, 7	
PE.B.1.4.2	Know how to apply the results of fitness assessments to guide changes in a personal program of physical activity and develop a training and conditioning program that enhances individual health-related needs.	3, 4, 5, 7	
PE.B.1.4.5	Know how to make changes in an individual wellness plan as lifestyle changes occur.	7	

Standards

7. Demonstrate understanding of correct biomechanical and physiological principles related to exercise and training.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.2.4.1	Understand how the laws of motion apply to the acquisition and improvement of skills.	not addressed	
PE.A.2.4.2	Know how to analyze, evaluate, and implement the mechanical principles of balance, force, and leverage that apply directly to self-selected activities.	1, 3, 4, 5, 7	
PE.B.1.4.1	Know how to maintain appropriate levels of cardiovascular fitness, muscular strength and endurance, flexibility, and body composition necessary for a healthy lifestyle.	3, 4, 5, 7	

Personal Fitness: Course No. 1501300
Correlation to Sunshine State Standards

Standards

8. Exhibit an improved level of health-related fitness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.1.4.1	Demonstrate competency or proficiency in self-selected activities.	7	
PE.B.1.4.4	Maintain and improve motor skills and knowledge necessary for participation in beneficial physical activity.	1, 2, 3, 4, 5, 6, 7	
PE.C.2.4.2	Participate in games, sport, dances, outdoor pursuits, and other physical activities that contribute to the attainment of personal goals and maintenance of wellness.	4, 5, 7	

Standards

9. Describe the relationship of individual lifestyle to personal fitness and wellness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.2	Know how regular physical activity can relieve the stress of everyday life.	1	
PE.A.3.4.3	Identify the effects of age, gender, race, ethnicity, socioeconomic status, and culture on physical activity preferences and exercise habits.	7	
PE.B.1.4.6	Know the correlation between obesity, high blood pressure, and increased physical activity.	1, 2, 3, 4, 5, 7	
PE.C.1.4.1	Understand the influence of age, gender, race, ethnicity, socioeconomic standing, and culture upon physical activity preferences and participation.	not addressed	
PE.C.2.4.3	Know the ways in which personal characteristics, performance styles, and activity preferences will change over the course of one's life.	1, 4, 5	

Standards

10. Demonstrate understanding of sound nutritional practices related to physical fitness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.7	Understand the utilization of fats, proteins, and carbohydrates as related to physical activity.	2, 7	

Personal Fitness: Course No. 1501300
Correlation to Sunshine State Standards

Standards

11. Demonstrate understanding of consumer issues related to physical fitness.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.5	Evaluate the effectiveness and use of community resources related to fitness.	6	

Standards

12. Demonstrate understanding of the benefits derived from participation in physical fitness activities.

Benchmarks		Addressed in Unit(s)	Addressed in Class on Date(s)
PE.A.3.4.6	Understand the importance of making a commitment to physical activity as an important part of one's lifestyle.	1, 3, 4, 5, 7	
PE.B.2.4.5	Understand the role of physical activity as a potential vehicle for social interaction and cooperative relations within the family and workplace.	7	
PE.C.1.4.3	Know the value of sport and physical activity in understanding different cultures.	not addressed	
PE.C.2.4.1	Identify personal feelings resulting from participation in physical activity.	1, 3, 4, 5, 7	

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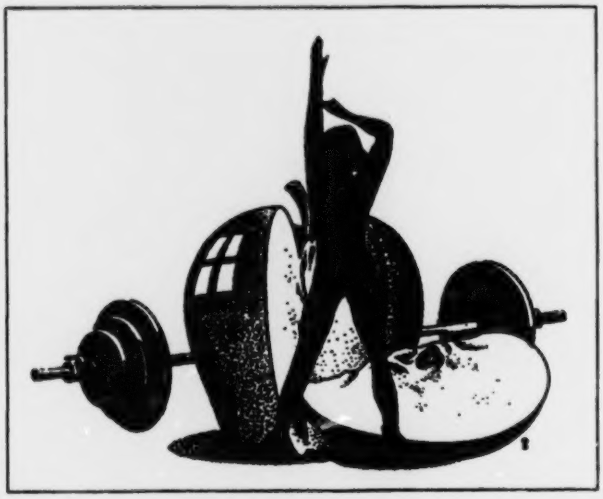
Course No. 1501300

Revised Edition



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Personal Fitness

Revised Edition

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Personal Fitness

Revised Edition

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Curriculum Improvement Project
IDEA, Part B, Special Project
LEON COUNTY SCHOOLS
Exceptional Student Education

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Physical Fitness

What's Inside?

A Baseball Catcher and Hitter

Physical Fitness

Vocabulary

Study the vocabulary words and definitions below.

agility	the ability to change direction of the whole body quickly and easily
balance	a kind of coordination that allows you to maintain control over your body while stationary or moving
body composition	the percentage of body weight that is fat compared to other body tissue such as muscle or bone
cardiovascular exercise	steady, sustained rate of exercise at which the heart can supply the oxygen needed by the body; also called *aerobic exercise*
coordination	the ability to use the senses in harmony with the muscles in the body to produce smooth and accurate movements
F.I.T.	the formula used to achieve overload and increase your level of physical fitness: Frequency (how often to exercise); Intensity (how hard to exercise); and Time (how long to exercise)
flexibility	the ability of a joint and muscle group to move through a range of motion

Physical Fitness

health-related fitness components	the parts of physical fitness the body must improve and develop to achieve well-being: cardiovascular or aerobic fitness, muscular endurance and strength; flexibility; and body composition
heat cramp	a muscle spasm caused by intense heat or lack of adequate fluid intake
heat exhaustion	a reaction to heat characterized by weakness and collapse as a result of dehydration
heat stroke	the most serious illness due to heat—considered a medical emergency; body stops sweating and exhibits a dangerously high body temperature
muscular endurance	the ability to use certain muscles repetitively for a long period of time
overload	training principle that says you must increase the demand on the body slightly beyond its normal level to improve physical fitness; to increase frequency, intensity, and time (*F.I.T.* formula)
physical fitness	the ability of the whole body to perform at maximum capability

Physical Fitness

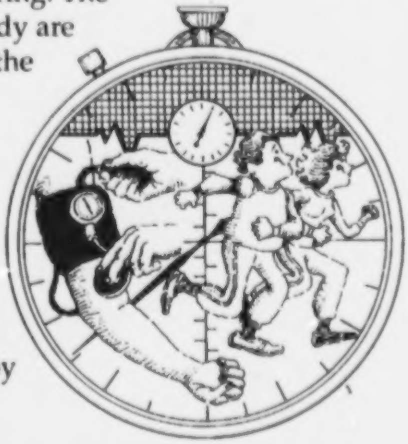
power	the ability to combine strength and speed in a movement
progression	a training principle that says you must gradually increase the amount of work performed by the body to improve physical fitness
reaction time	the time required to start a movement after being alerted to the need to move
sedentary	to sit or rest a great deal and do little exercise
skill-related fitness components	movements that help a person in any physical activity, particularly sports and recreation: agility; balance; coordination; power; reaction time; and speed
specificity	a training principle that says to reach a specific fitness goal you must train your body in a specific way *Example:* to increase strength you lift weights
speed	the ability to move your body quickly from one point to another

Physical Fitness

Introduction

Nearly all of us want to look better and feel better. We want to learn to manage our stress and emotions rather than let them overwhelm us and limit our activities and well-being. In short, we want to function at the highest level we can in our daily living.

One of the most important and necessary ways to achieve these goals is to become physically fit. **Physical fitness** is the ability of the whole body to perform at maximum capability. To perform at a high level, the body's systems must be healthy. The physically fit body can breathe in adequate oxygen and deliver it throughout the body. The physically fit body has muscles that can work without easily tiring. The joints and muscles in a physically fit body are flexible rather than tight and stiff. And the physically fit body does not carry too much fat.



The physically fit body works efficiently, and so it is able to provide something many of us feel we lack: *energy*. Physically fit people have enough energy to complete their daily work. They have enough energy to enjoy leisure time and respond to any emergency situation. When we look at someone with energy, we often see someone who looks healthy and productive—someone who is living a happy and full life. Achieving physical fitness improves every part of our lives.

Benefits from Achieving Physical Fitness

- Improves your physical appearance. A fit body has strong, toned muscles.
- Improves your overall health and wellness. Your heart will be stronger, and your cholesterol level will drop.

Your body weight will be easier to control. Your risk of illness will decrease. Your bones will be stronger, and you may live longer!

- Makes you happier. Your self-esteem and confidence rise, you have less mental fatigue, and your relationships improve.
- Quality of life is improved. Tension is released, you have increased energy and pep, and a better attitude.
- Stress, anxiety, and depression are reduced.
- Quality of sleep is improved.
- Improves mental sharpness, which means more success in your schoolwork or job.
- Reduces your risk of cardiovascular disease and other chronic diseases. The lifestyle you lead in your early life is reflected in your later years. Stay healthy and fit!

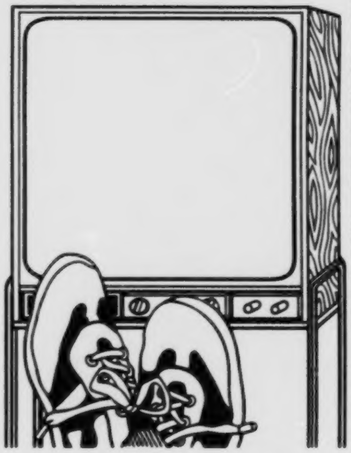
This book is designed to help you understand the different components, or parts, of physical fitness. It will help you evaluate your present level of physical fitness. And this book will help you develop a fitness program that is suited to your own fitness level and personal needs.

Fitness Evaluation of Americans: A Failing Grade

Our ancestors did not have to think much about fitness. Physical activity was built into their lifestyles. They worked their gardens, plowed fields, and took care of livestock. They hand-washed their clothes and dishes, gathered firewood, and made their own clothes. And they walked to get from one place to another. They even spent their leisure or free time in some kind of physical activity.

Our lifestyles do not always include daily physical exertion and exercise. Rather than walk, we drive cars or ride busses. Rather than farm or do manual labor, we sit at desks and work on computers. Rather than hand-wash clothes, we use automatic washing machines. Rather than exercise or physically exert ourselves, we watch television or movies, or we sit and play video games. Most people live a **sedentary** lifestyle—we spend our time sitting rather than being active.

Today, only one in five Americans is physically fit. Four out of five Americans score poorly on fitness tests for muscular strength, **flexibility**, and cardiovascular endurance.



The typical high school student's lifestyle does not include enough exercise. In addition, three out of four teenagers eat too much fat. Today's teenagers have a significantly higher percentage of body fat compared to teenagers 20 years ago. The blood pressure of teens is higher than the blood pressure of teens in the past. Today's teens are not as healthy overall as were teens in the past.

A sedentary, or inactive, lifestyle and a diet high in fat are considered major risk factors for heart disease. Cardiovascular disease is the leading cause of death in the United States. This disease causes over half of all deaths.

Exercise and a healthy lifestyle should be lifetime habits you begin early in your life. Being physically active will greatly reduce your risk of heart disease. The following chart shows the major risk factors for heart disease that you can and cannot control through healthy lifestyle behaviors.

Major Risk Factors for Heart Disease

Factors We Can Control	Factors We Cannot Control
• Physical inactivity • Overweight or obesity • High blood pressure • High stress • High cholesterol • Diet high in saturated fat and excess sugar	• Age (the older you are, the higher your risk) • Sex (males have a higher risk) • Heredity (conditions and diseases that might run in your family)

Health-Related Fitness Components

To achieve health the body must improve and develop its **health-related fitness components**. These components include cardiovascular or aerobic fitness; muscular strength; **muscular endurance**; flexibility; and **body composition**. Taken together, these components are a way to measure overall health and physical fitness.

Cardiovascular Exercise: Strengthening the Heart

The *cardiovascular system* includes the heart and blood vessels. This system must continuously pump oxygen-rich blood through the blood vessels to all of your muscles, including your most important muscle—your heart. **Cardiovascular exercise**, or *aerobic exercise*, increases the amount of oxygen the body needs to meet its energy output. The more oxygen-rich blood your heart pumps throughout the body, the stronger your cardiovascular system becomes. Cardiovascular exercises are continuous activities that use the large muscle groups of the body.

Cardiovascular endurance is the most important physical fitness component for health. Your life depends upon the fitness of your heart, blood vessels, and lungs. They must be strong enough to deliver nutrients and oxygen throughout the body.

A swimmer performing uninterrupted laps in a pool for 30 minutes would be doing aerobic exercise.

> **Activities to Increase Cardiovascular Fitness:** brisk walking, jogging, biking, swimming, aerobic/step classes, rope jumping

Muscular Strength: Pushing a Weight One Time

The capacity of a muscle to exert the greatest possible force against a resistance is referred to as *muscular strength*. Strength is important for proper posture, for successful sports performance, and in resisting injuries.

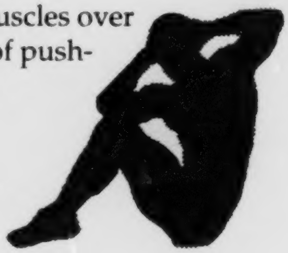
For example, a weight lifter using his legs to push the most weight he can one time would be using muscular strength.

Activities to Increase Muscular Strength: weight lifting with challenging resistance, sprinting or other explosive-type movements, strength conditioning classes

Muscular Endurance: Continuous Use of a Muscle

Muscular endurance is the ability to use certain muscles over and over for a long period of time. The number of push-ups or abdominal crunches you can do is a good measure of your muscular endurance.

When you have muscular endurance, your body has the energy to resist fatigue. Your posture will be improved and you will have a reduced risk of back pain.



A person washing and waxing a car for two hours requires a certain degree of muscular endurance. A person shoveling snow or raking leaves also must have an adequate amount of muscular endurance.

Activities to Increase Muscular Endurance: resistance exercises with high repetitions, muscle toning classes, calisthenics

Flexibility: Moving through a Range of Motion

The ability of a joint and muscle group to move through a range of motion is defined as *flexibility*. When you have good flexibility, your muscles move freely and efficiently. Flexibility increases your resistance to muscle soreness, reduces your risk of injury, and helps you maintain good form as your body moves and rests.

A punter or field goal kicker on a football team must have excellent flexibility in his leg muscles to be efficient at kicking the football.

A gymnast performing a back walkover must possess a high degree of flexibility, especially in the back muscles.

Activities to Increase Flexibility: progressive stretching exercises, gymnastics, karate

Body Composition: Fat vs. Muscle and Bone

Your body is composed, or made up, of bones, muscles, fat, blood, and organs. Each of these components is part of your body's weight. The weight of your body is divided into lean body mass and fat mass. Lean body mass is the weight of everything except fat. *Body composition* refers to a comparison of these two. Body composition is usually expressed as a ratio or percentage. The percentage of your body weight that is fat tissue compared to the weight of other body tissue, such as bones and muscles, is your body composition. A low percentage of body fat is more important for health and fitness than a low body weight.

Methods of Determining Body Composition

Body composition can be measured or estimated in many different ways. A few of the more common methods include skinfold measurements; underwater weighing; bioelectrical impedance; and various circumference measurements on the body.

Skinfold measurements are taken with skinfold calipers on a few designated sites of the body. The skin and fat is grasped away from the underlying muscle. The measurements are then plugged into a formula to calculate body fat and fat-free percentages.

Underwater weighing is a more difficult and inconvenient method of testing body composition. This method measures the amount of water that is displaced, or pushed up, when a person is under water. A person who has more body fat will displace more water than a person of equal weight who has less fat.

The *electrical impedance* method attaches electrodes to the body and measures the electrical current as it passes through the body. The faster the flow, the higher proportion of fat in the body.

Skill-Related Fitness Components

Developing the **skill-related fitness components** improves a person's ability in any physical activity. These components are especially important in playing a sport or in a recreational activity. They include **agility, balance, coordination, power, reaction time**, and **speed**. As a person increases her skill in these components, her performance in sports, games, and recreational activities will also increase.

Agility: Changing Direction

Agility involves the ability of the whole body to change directions quickly and easily.

A basketball player guarding an opponent back and forth in a quick and easy manner would be demonstrating agility.

Activities to Increase Agility: tennis, wrestling, basketball, soccer, dancing, or cheerleading

Balance: Maintaining Control of the Body

Balance allows you to control your body while you are standing or moving.

A gymnast doing a routine on the balance beam must have good balance in order to perform the stunts without falling. For an in-line skater to be successful at skating, he or she must develop balance first.

Activities to Increase Balance: in-line skating, surfing, diving, gymnastics, dancing

Coordination: Matching the Senses and the Muscles

Coordination is the ability to use the senses in harmony with the muscles in the body to produce smooth and accurate movements.

In order to be successful at jumping rope you must be able to use your vision along with your legs and feet.

Activities to Increase Coordination: racquet sports, dancing and cheerleading, kicking games, rope jumping

Power: Combining Strength and Speed

The ability to combine strength and speed in a movement is called *power.*

A baseball player must exert a tremendous amount of force, or power, when throwing the ball from the outfield to home plate.

Activities to Increase Power: leaping and jumping activities, throwing, speed races

Reaction Time: Responding to Signals

Reaction time is the time required to start a movement after being alerted to the need to move.

For instance, when sparring in karate, quick reaction time is necessary to avoid being punched or kicked by your opponent.

Activities to Increase Reaction Time: volleyball, fencing, karate, track

Speed: Moving Quickly

The ability to move your body rapidly from one point to another is known as *speed.*

A softball player running very swiftly from first to second base to beat the throw demonstrates good speed.

Activities to Increase Speed: track, softball or baseball, football, basketball, various other sports

Basic Training Principles: Overload; Progression; and Specificity

To develop your physical fitness, you should participate in a regular program of exercise. An effective exercise program should include three basic training principles. They are **overload**, **progression**, and **specificity**.

All the health-related fitness components can be improved by using these three basic fitness training principles.

Overload: Increasing the Demand on the Body

The only way to progress in your fitness program is to overload. When you overload, you increase the amount of work performed by the body slightly beyond its normal level.

There are three general ways to overload the body during exercise: Frequency, Intensity, or Time (**F.I.T.**). F.I.T. is a formula describing how often, how hard, and how long you need to exercise.

> **F (Frequency):** To improve your fitness level, include more workouts than you usually do per week. If you participate in aerobic activity two times per week, add another day of aerobics and perhaps a day of weight training to your current routine.
>
> **I (Intensity):** To become more fit you need to increase the difficulty of your workouts. By lifting heavier weights than before or walking up hills instead of on a flat terrain, you will increase the intensity of your workout.
>
> **T (Time):** Increasing the time you participate in an activity is another way to overload your fitness. Instead of increasing your effort while exercising on the treadmill, you might try lasting a longer period of time.

Each of the overload factors should be a part of our exercise program for muscular strength and endurance, cardiovascular fitness, and flexibility.

Progression: Increasing the Amount of Work Performed

To progress in your exercise, the amount of work performed by the body needs to gradually increase. The body is quick to adapt to the workload placed upon it. *Progression* is important in order for you to continually improve your level of fitness. However, try to avoid overloading the body with too much increase too soon.

Specificity: Training to Reach Certain Goals

Specificity in training means that you train your body in a specific way to reach a specific fitness goal. For example, if you want to increase your strength, you would lift heavy resistance. If your goal is flexibility, you would perform stretching exercises.

Exercising Safely: Guidelines

Exercise should be enjoyable, not painful. The old adage of "no pain, no gain" now reads "train, don't strain." Exercise can be done safely by following a few basic guidelines and prevention measures.

Get a medical checkup. A physical examination is recommended before beginning an exercise program. A doctor can check for any conditions that would make it unsafe for you to exercise.

Dress appropriately for exercise. Clothing should be comfortable and loose-fitting. Wear lightweight fabrics that help absorb sweat and allow the sweat to evaporate. Wear quality footwear with good support, cushion, and comfort.

Listen to your body. If you feel pain while exercising, slow down or stop immediately. If you have been ill, exercise at a slower pace when you start back.

Exercise at the correct level. For exercise to be beneficial for you, it is important to use the correct frequency, intensity, and time. Start slowly and gradually increase the F.I.T. formula as you become more accustomed to exercise.

Always warm up and stretch. A five- to ten-minute *warm-up* and gentle stretch period should be included before you jump into your activity. A warm-up helps in preventing muscle strains, increases the heart rate slowly, and prepares your body for more intense exercise.

Always cool down, stretch and relax. A five- to ten-minute *cool-down* should follow your workout. The cool-down helps to bring the heart rate back to normal, increases flexibility, and relaxes the body.

Heat-Related Problems: S.E. United States Weather

Exercising in a warm environment with high humidity can cause your body temperature to soar. This can increase your risk of a heat-related problem, or heat illness. It is important to take precautions to reduce the risk of a heat illness.

Heat Illness Prevention Tips

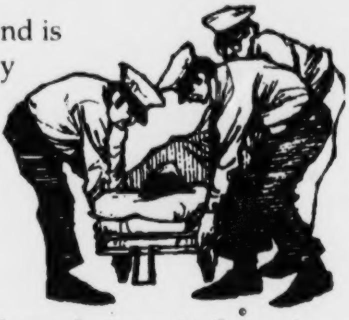
- Don't rely on thirst as an indicator of fluid loss.
- Drink one-half to one cup of water every 15 minutes during physical activity.
- Drink water before, during, and after physical exertion to keep your body properly hydrated. Maintaining hydration means having adequate fluids for your body to function properly.
- Avoid drinks with caffeine or alcohol, which cause the body to excrete fluids rapidly.
- Decrease the frequency, intensity, and time (F.I.T. formula) when exercising in extreme heat and humid climates.
- Avoid working out in rubberized suits or other heavy clothing that cause heavy perspiration. These prevent evaporation of sweat and cause further dehydration, or extreme loss of body fluids.
- Get used to exercising in the heat for approximately seven to ten days.
- Exercise early in the day or later in the day, when the heat is less intense.

Symptoms of Heat-Related Illnesses

Heat Cramps	Heat Exhaustion	Heat Stroke
• Muscle cramping	• Cold, clammy skin	• Lack of sweat
• Thirst	• Weak, faint, dizzy	• High body temperature
• Chills	• Profuse sweating	• Dry, hot skin
• Rapid pulse	• Rapid pulse	• Confusion
• Nausea	• Headache	• Sudden collapse
	• Pale skin	• Possible unconsciousness
	• Extreme fatigue	

First aid for **heat cramps** and **heat exhaustion** is to move the person out of the sun to a shady, well-ventilated place. Stretch and massage the cramp and apply ice to the affected muscles. Let the person rest, but rehydrate, encouraging the person to drink fluids. Remove extra clothing and refer the person to a physician, if necessary.

Heat stroke is an extreme medical emergency and is life threatening. Call immediately for emergency medical help. In the meantime, cool the victim with cold water, ice bags, and a fan. Remove all extra clothing.

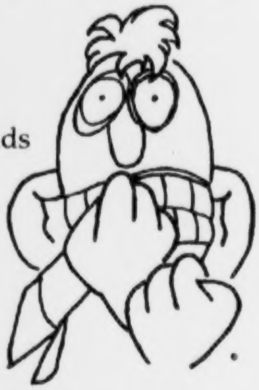


Stress Management: Learning to Cope

Stress is the response of the body to the demands made upon it. Stress is natural and with us nearly all of the time. We can use stress to our advantage by challenging ourselves in situations or by adding opportunities to our lives. However, too much stress of any kind can affect our physical and mental well-being. The key to successful stress management is to learn healthful ways to cope with stress.

Types of Stress: Eustress and Distress

Positive stress, called *eustress,* can be caused by something such as winning an award. Eustress can serve to motivate us and to keep us from becoming bored. Eustress can help us to do our best and to become more creative. Eustress can even provide us with energy to accomplish a task or to achieve daily goals.



Negative stress, called *distress,* can be caused by an upsetting event such as failing a test. The body responds to both positive and negative stress in the same manner.

Too much of any stress can lead to health problems. Minor symptoms of stress include tension headaches, tight neck and shoulder muscles, sleeplessness, constipation, irritability, and fatigue. Prolonged stress can lead to illnesses, dizziness, severe headaches, and diarrhea. Serious stress can even lead to major health problems such as high blood pressure, chronic depression, ulcers, heart disease, and diabetes.

Types of Stressors: The Source of Stress

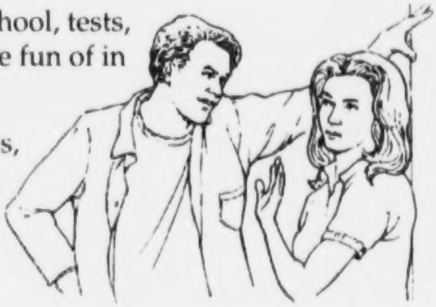
A *stressor* is the source or cause of the stress. Anything can cause stress depending upon how an individual responds to various situations. The cause of stress can be psychological, environmental, social, or physiological.

- Psychological—anger, love, anxiety, fear
- Environmental—excessive heat, cold, noise, overcrowding
- Social—relationships, family problems, loneliness
- Physiological—illness, certain foods such as caffeine, sugar, alcohol, drugs

Sources of Teen Stress

Many situations can create stress among high school students. For example, pressure to make good grades, rules from parents, various life changes, and challenges associated with performance are common sources of teen stress. Other common stressors include the following:

- school issues (moving to a new school, tests, grades, giving reports, being made fun of in class)
- social relationships (peer pressures, friendships, dating, acceptance in a group)
- self-image (personal worth, acceptance of own strengths and limitations)
- meeting expectations (satisfying teachers, supervisors, parents, other authoritative figures)
- family relationships (rules, disciplinary measures, quarrels, divorce, siblings).



The Body's Reaction to Stress: The Three Stages

The body responds to stress by going through these three stages: 1) alarm, 2) resistance, and 3) exhaustion.

Alarm Stage

The body recognizes the stress and releases hormones such as adrenaline as it prepares for "fight or flight." The individual will either stay and face the situation or escape the situation.

Resistance

In this stage, your body repairs any damage caused from the stress. For example, an argument with a friend can trigger symptoms such as an increase in heart and breathing rate, tensed muscles, increased irritability, and fatigue. If stress is eliminated or managed, those symptoms usually disappear. If, however, the problem persists and a solution is not found, symptoms may continue.

Exhaustion

Long-term stress that is not properly handled can eventually cause physical and mental exhaustion. Exhaustion occurs when a person completely wears out and feels entirely drained of energy.

Long-term stress can cause migraine headaches, ulcers, chronic illnesses, high blood pressure, heart problems, backaches, digestive disorders, severe depression, and insomnia.

Coping with Stress: Strategies

While it is impossible to live completely free of eustress or distress, many forms of coping behaviors can help reduce the negative effects of stress. Many factors including nutrition, exercise, rest and relaxation, attitudes, and relationships contribute to our ability to manage the stresses of life.

People cope with stress in many ways. Positive coping strategies can actually help decrease stress. Negative coping strategies can worsen or increase stress. Unfortunately, many people often choose methods of coping that are not healthy.

Negative Coping Strategies

Here are some common behaviors that can work *against* reducing stress.

- Using drugs or alcohol
- Procrastination (putting things off)
- Irritable, hostile, temperamental, or aggressive behavior
- Denying or ignoring your true feelings
- Blaming others
- Inflexible attitudes
- Self-destructive talk

Positive Coping Strategies

Managing your stress with positive coping strategies can lessen your stress and help your mind and body function normally. Here are a few of the healthiest ways to cope with stress.

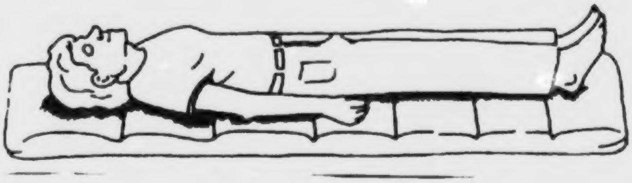
Exercise regularly. Physical activity helps to relieve stress and tension in a number of ways. It relaxes the muscles and increases the flow of blood. It improves digestion. Physical activity even increases your self-esteem. Endorphins, or pain relieving substances, are released during exercise. They produce a *natural high* feeling and help the body cope with daily stress. A good workout clears the mind and energizes the body.

Emphasize good nutrition. It is important to eat a variety of healthy foods to assure that you are getting proper nutrients. Eating a balanced diet helps your energy level and makes you feel better. A healthy diet should be low in fat. Sugar, caffeine, and nicotine can make you jittery, nervous, and put negative stress on the heart.

Practice relaxation techniques. Relaxation methods such as meditation, progressive muscular relaxation, and massage therapy can help in reducing stress. A massage helps in reducing muscle tension, relieving stress, and promoting relaxation. Meditation techniques such as deep breathing can help calm your body and help improve your energy and concentration.

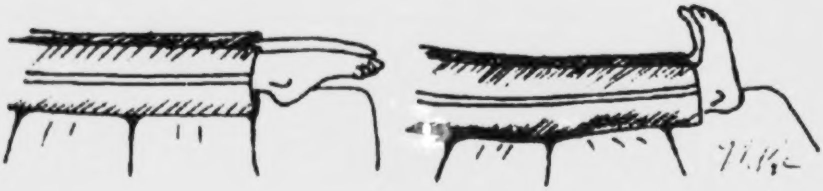
Progressive Relaxation Activities

Find a quiet place where you will not be distracted for at least 20 to 30 minutes. Lie flat on your back on a firm surface with your eyes closed. Take off your shoes and get comfortable. Let your arms fall loosely by your sides.



1. Be aware of what parts of your body are tense. Contract each group of muscles, then relax. Make sure to breathe slowly and deeply. Do each muscle group two or three times until tension is released. Then, move to the next area.

2. Curl your toes away from your head and point your feet downward. Relax. Flex your feet, pulling your toes towards your head. Relax.

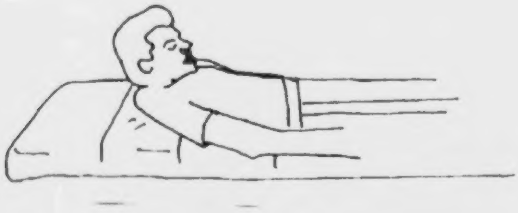


3. Fully extend the legs, tightening the muscles on top of your thighs. Relax.

4. Press your heels down into the floor, creating tension in the back of your thighs. Relax.

5. Squeeze the buttocks together tightly. Relax.

6. Press your lower back to the floor and at the same time pull your abdominal muscles inward. Relax.
7. Press elbows into the floor, creating tension in the upper back. Relax.
8. Roll shoulders inward, tensing neck and upper back. Relax.
9. Shrug shoulders as if trying to touch them to your ears. Relax.
10. Spread fingers as far apart as possible, then clench them into a tight fist. Relax.
11. Make a tight fist and rotate the wrist. Slowly open the hand.
12. Tilt head back with chin up, pressing the head into the floor. Relax.
13. Bend your head forward, touching your chin to your chest. Relax.



14. Raise the eyebrows, wrinkling the forehead. Relax. Close your eyes tightly and wrinkle your nose. Slowly, relax your face.
15. Open your mouth widely. Relax.

As you still lie in a relaxed state, focus on areas of your body that are still feeling tense. Repeat the exercises for those particular muscle groups.

Pre-Exercise Health History Form

Name: ______________________ Date: ______________

Address: ____________________ Phone: ______________

______________________ Birth Date: ______________

Family Physician: ______________ Phone: ______________

Health History *(Check all that apply.)*

______ Diabetes

______ Rheumatic fever

______ Heart murmur

______ Any heart trouble

______ High blood pressure

______ Lung disease

______ Breathing problem

______ Anemia

______ Overweight problem

______ Eating disorder

______ Injuries (to back, knees, ankles, etc.)

______ Surgery

______ Allergies

Family History *(Check if grandparents, parents or siblings have ever had any of the following illnesses.)*

______ High blood pressure

______ High cholesterol levels

______ Diabetes

______ Congenital heart disease

______ Heart surgery

______ Stroke

______ Cancer

______ Heart Attack

Explain all checked: ______________

____

____

____

Yes No

___ ___ Do you use any tobacco products? If yes, how much? ___

___ ___ Do you drink alcohol? If yes, how much? ___

___ ___ Is your body weight and percent body fat within healthy standards?

___ ___ Are you taking any prescribed medications? If yes, list. ___

___ ___ Have you had a physical examination recently? When? ___

___ ___ Do you have any injuries or conditions that would give you problems when you exercise? If so, explain. ___

___ ___ Do you have a method for handling stress? Explain. ___

___ ___ Do you get sufficient sleep and rest?

___ ___ Do you have a healthy diet? Describe. ___

___ ___ Do you have an eating disorder?

___ ___ Do you exercise regularly? Describe your activities. ___

I acknowledge, to the best of my ability, that I am in good health and have no known medical problems that would restrict my ability to participate in this exercise program.

Signature ___ Date ___

Parent/Guardian Signature ___ Date ___

Other Positive Tips for Managing Stress

- Get sufficient rest and sleep.
- Set realistic goals and expectations for yourself.
- Organize yourself and set priorities. If an unpleasant task faces you, do it early and get it over with. Procrastination is stressful.
- Learn to recognize and act on early symptoms of stress.
- Share your problems with a friend, family member, or counselor.
- Be aware and recognize the parts of your life that you can control and let the others go. Know your limits and learn to accept what is.
- Be your best friend. Encourage, pamper, and take care of yourself.
- Respect your body.
- Make decisions and avoid letting problems drift.
- Slow down and take pleasure in every moment. Take on tasks one at a time, focusing on what is in front of you.
- Communicate positively and clearly with others.
- Balance your life, work, and leisure. Avoid too much of anything.

Summary

Physical fitness helps you look and feel better, and it helps you function at a high level in your daily living. There are numerous physical and mental benefits from being physically fit. However, Americans today are generally unfit and overfat, increasing their risk for many diseases.

Cardiovascular fitness, *muscular endurance* and strength, *flexibility*, and *body composition* are all *health-related fitness components*. Cardiovascular fitness is the most essential component for life!

The *skill-related fitness components* of physical fitness are necessary in sports and recreational activities. They include *agility, balance, coordination, power, reaction time*, and *speed*.

To improve your fitness you must periodically alter your exercise routine. The training principles used to reach fitness goals are *overload, progression*, and *specificity*. To overload, or improve your fitness level, you must apply the *F.I.T.* formula. F.I.T. stands for Frequency (how often to exercise), Intensity, (how hard to exercise), and Time (the length of exercise).

Stress is the response of the body to any demands made upon it. Stress is a natural part of life. Our bodies respond the same to both good (eustress) and bad (distress) stress. Learning to recognize our individual sources of stress and using positive coping strategies will reduce our overall stress.

Safety prevention measures should be taken upon starting an exercise program. Among these are a medical checkup, appropriate attire, exercising at your own fitness level, and warming up and cooling down.

Additional precautions must be taken when exercising in high heat and humidity. To prevent heat illnesses it is important to drink plenty of water, avoid wearing rubberized suits, avoid alcohol and caffeine, and get use to the climate gradually.

Heat-related illnesses can occur when a person becomes extremely overheated and dehydrated, or loses a great amount of bodily fluids. *Heat cramps, heat exhaustion*, and *heat stroke* are serious heat illnesses that can occur when the body becomes too dehydrated. If life-threatening heat stroke occurs, emergency medical help should be called immediately.

Fitness Career Opportunity!

The Personal Trainer

Personal trainers design well-organized fitness and health programs for individual clients and help them meet their short- and long-term fitness goals. Here are some common reasons why clients hire personal trainers:

Weight management
Improve cardiovascular/aerobic fitness
Muscular strengthening and development
Body shaping
Improve psychological health
Improve self-esteem
Improve lifestyle
Improve athletic performance
Improve exercise adherence and motivation
Improve nutrition and diet
Improve physical health
Meet social needs

A qualified trainer usually has an academic degree in physical education or exercise physiology, and/or is certified by a national organization. For more information on personal trainers contact:

American College of Sports Medicine
(ACSM)
P.O. Box 1440
Indianapolis, Indiana 46026
(317) 637-9200

American Council on Exercise
(ACE)
P.O. Box 910449
San Diego, California 92191-0449
(800) 825-3636

Aerobics & Fitness Association of
America (AFAA)
15250 Ventura Blvd., Suite 200
Sherman Oaks, CA 91403-3297
(800) 224-2322

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Identification

Write yes *or* no/not sure *in front of each of the following stress management statements.*

__________ 1. I enjoy school.

__________ 2. I trust and value my own judgment.

__________ 3. When I make mistakes, I usually admit them and learn from them.

__________ 4. I value my own opinion but can appreciate the views of others.

__________ 5. I can recognize and accept my feelings of being angry, sad, happy, and scared.

__________ 6. I usually know how to deal with my feelings.

__________ 7. I would know where to get help and would do so if I couldn't deal with my feelings.

__________ 8. I can say *no* without feeling guilty.

__________ 9. I set realistic objectives for myself.

__________ 10. I can establish and maintain friendships.

__________ 11. I accept responsibility for my actions.

__________ 12. I can set limits for myself and maintain them.

__________ 13. I feel enthusiastic most of the time.

__________ 14. I am able to give and receive love.

__________ 15. I know how to relax my body and mind without the use of drugs.

Total of *No/Not Sure* responses: __________

Take your *no* responses and devise a plan to correct or improve on them. Write your plan of attack below.

Fill in the Blanks

Use the word list below to complete the following statements. Write the correct term on each line. Each term is used only once.

heart disease
self-image
positive coping strategies
distress
stress
negative coping strategy
eustress
endorphins

1. The response of the body to any demands made upon it is called ____________________.

2. Stress can be positive, called ____________________, or negative, called ____________________.

3. Serious stress can cause major health problems such as high blood pressure, ulcers, and ____________________.

4. Some of the main sources of teen stress are school issues, social relationships, and ____________________.

5. Regular exercise, meditation, and relaxation are ____________________.

6. Using drugs or alcohol to cope with stress or escape your problems is a ____________________.

7. Exercise produces pain-relieving substances called ____________________.

How Healthy Are You?

True or False

Take this appraisal to help assess your current level of wellness and to identify behaviors that can affect your health. Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

Family and Friends

__________ 1. I can share my feelings with my family.

__________ 2. I have someone in my life who will listen to me when I need to talk or have a problem.

__________ 3. I prefer doing things with a group rather by myself.

__________ 4. I give and receive affection well.

Physical Activity

__________ 1. I am physically active for at least 30 to 60 minutes three or more times per week.

__________ 2. My fitness level is higher than most individuals my age.

__________ 3. I exercise for reasons other than just losing or maintaining my weight.

__________ 4. I usually don't get short of breath participating in moderate-intensity exercise.

__________ 5. I include stretching exercises, aerobic exercise, and weight training in my exercise.

Body Composition

__________ 1. My body fat percentage and weight is in the normal, healthy range.

__________ 2. I avoid dieting, especially yo-yo dieting and binge eating.

__________ 3. I am happy with the way my body looks.

Nutrition

__________ 1. I regularly eat a healthy, well-balanced diet.

__________ 2. I keep my daily total fat intake to 30 percent or less.

__________ 3. I rarely eat excess sugar, salt, high-fat fast foods, or junk foods.

__________ 4. I avoid fasting, skipping meals, or bingeing.

__________ 5. I eat breakfast regularly.

__________ 6. I avoid eating my largest meal in the evening or eating late at night.

Alcohol

__________ 1. I don't do things when drinking that I later regret.

__________ 2. Drinking has never created problems for me.

__________ 3. I don't drink to cope with stress or depression.

Physical Fitness

Tobacco or Drug Use

__________ 1. I do not smoke cigarettes or use any other type of tobacco.

__________ 2. I do not use any illegal drugs.

__________ 3. I drink no more than two caffeinated beverages per day.

__________ 4. I am not addicted to any over-the-counter or prescription drugs.

Automobile Safety

__________ 1. I always use seat belts when I drive.

__________ 2. I always use seat belts when I am a passenger.

__________ 3. I have not had a speeding ticket or other moving violation in the last year.

__________ 4. I do not drive after drinking.

Personal

__________ 1. I am aware that anyone who engages in sexual activity should protect themselves against STDs and unwanted pregnancies.

__________ 2. I am aware of the dangers of sexually transmitted diseases (e.g., herpes, genital warts, AIDS).

__________ 3. I check my body at least monthly for unusual lumps, bumps, dark spots, or sores.

Sleep and Relaxation

__________ 1. I find it easy to unwind and relax.

__________ 2. I have specified methods for relaxing.

__________ 3. I get at least six to eight hours of sleep each night.

__________ 4. I sleep soundly, rarely waking up during the night.

__________ 5. I usually feel rested and energized in the morning.

Stress Management

__________ 1. I practice positive coping strategies to manage stressful situations.

__________ 2. I seldom feel rushed, tense, or anxious.

__________ 3. I usually complete most of the tasks I set out to accomplish.

__________ 4. I rarely get ill and have to take time off from work or school.

Cardiac Risk

__________ 1. My blood pressure is within the normal range.

__________ 2. My total cholesterol is within the healthy range.

__________ 3. I have no more than two immediate relatives over age 60 with cardiovascular disease or who have died from heart disease.

Physical Fitness

Personality

_________ 1. I am usually happy and have a positive outlook.

_________ 2. I can usually relax and enjoy leisure time without worrying about other things.

_________ 3. I am rarely demanding, controlling, or hostile.

Scoring: Total the number of true responses. _________

40-48: **Excellent.** Congratulations! Your score indicates a higher than average healthy lifestyle. By continuing to choose healthy habits throughout your life, you can enjoy a quality life with the greatest chance for a healthy body and mind.

25-39: **Average.** This score indicates an average healthy lifestyle, but there is room for improvement. Review your false responses and gradually modify your lifestyle to help them become true statements.

24 or below: **Below Average.** This score indicates that you are taking unnecessary risks with your health. This makes you more prone to developing a health or medical problem, or to be involved in an accident. These high risk habits can be prevented by identifying your lifestyle patterns and making a plan to improve them.

Identification

List 10 habits or characteristics you feel a physically healthy and fit individual possesses. Be able to give reasons for your answers.

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________

Physical Fitness

Identification

Write **HR** *for all those that are health-related components or activities and* **SR** *for all those that are skill-related components or activities. Write the correct answer on each line.*

__________ 1. step aerobics class

__________ 2. balance

__________ 3. football

__________ 4. coordination

__________ 5. brisk walking

__________ 6. muscular strength

__________ 7. power

__________ 8. reaction time

__________ 9. weight lifting

__________ 10. muscular endurance

__________ 11. body composition

__________ 12. agility

__________ 13. flexibility

__________ 14. gymnastics

__________ 15. cardiovascular endurance

Multiple Choice

Circle the letter of each correct answer.

1. The most important part of physical fitness is ____________ .

   a. strength
   b. muscular endurance
   c. flexibility
   d. cardiovascular fitness

2. A regular exercise program ____________ .

   a. helps you to look and feel better
   b. improves your self-esteem and confidence
   c. reduces your risk of heart disease
   d. all of the above

3. ____________ is a major risk factor for heart disease that you cannot control.

   a. Obesity
   b. Heredity
   c. Smoking
   d. Physical inactivity

4. ____________ is *not* a health-related part of fitness.

   a. Body composition
   b. Cardiovascular
   c. Muscular strength
   d. Coordination

5. ____________ is *not* a skill-related part of fitness.

   a. Balance
   b. Power
   c. Reaction time
   d. Flexibility

6. __________ is *not* one of the ways in which you can apply the overload principle.

   a. Intensity
   b. Progression
   c. Frequency
   d. Duration of time

7. __________ is *not* one of the principles of training.

   a. Overload
   b. Individuality
   c. Progression
   d. Specificity

8. Increasing the amount of work performed by the body beyond its normal level is an example of __________ .

   a. specificity
   b. progression
   c. overload
   d. duration

9. A cool-down in your exercise routine should be included to __________ .

   a. allow the heart rate to gradually return to normal
   b. prevent soreness and increase flexibility
   c. help relax the body
   d. all of the above

10. A warm-up __________ .

    a. helps avoid muscle strains
    b. gradually increases the heart rate
    c. is not needed once you are in good physical shape
    d. a. and b.

Physical Fitness

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 1. A high percentage of Americans are out of shape and overweight.

__________ 2. Today's teenagers are more physically active and fit than ever before.

__________ 3. Cardiovascular disease is the leading cause of death in the United States.

__________ 4. You have to be an athlete or be sports oriented to be physically fit.

__________ 5. Leading an inactive lifestyle is considered a major risk factor for heart disease.

__________ 6. Muscular endurance is the ability of a muscle to exert maximum force against a resistance.

__________ 7. Thirst is a good indicator of sweat loss and when you need to drink water.

__________ 8. Your body weight is a much better indicator of overall health and fitness than your body fat percentage is.

__________ 9. Strength and speed combined in movements such as leaping and jumping are defined as power.

Physical Fitness

__________ 10. Wearing a non-breathable rubber suit while exercising reduces the body's ability to release heat, which can be very dangerous.

__________ 11. Losing great amounts of sweat during exercise is nothing to be concerned about.

__________ 12. Increasing your aerobic workout from 20 minutes to 45 minutes is an example of overloading.

__________ 13. The body responds in different ways to physical and mental stress.

__________ 14. Exercise does little to relieve tension and stress.

__________ 15. Stress can be caused from environmental factors, from various foods, or social relationships.

Physical Fitness

Identification

Write the correct vocabulary term on each line.

________________________ 1. the ability of a joint and muscle group to move through a range of motion

________________________ 2. a kind of coordination that allows you to maintain control over your body while stationary or moving

________________________ 3. the percentage of body weight that is fat compared to other body tissue such as muscle or bone

________________________ 4. the ability to use the senses in harmony with the muscles to produce smooth and accurate movements

________________________ 5. the ability to change direction of the whole body quickly and easily

________________________ 6. steady, sustained rate of exercise at which the heart can supply the oxygen needed by the body

________________________ 7. the parts of physical fitness the body must improve and develop to achieve well-being: cardiovascular or aerobic fitness; muscular strength and endurance; flexibility; and body composition

________________________ 8. a reaction to heat characterized by weakness and collapse as a result of dehydration

Physical Fitness

______________________ 9. a training principle that says you must gradually increase the amount of work performed by the body to improve physical fitness

______________________ 10. the ability to use muscles repetitively for a long period of time

______________________ 11. a training principle that says you must increase the demand on the body slightly beyond its normal level to improve physical fitness; to increase frequency, intensity, and time (*F.I.T.* formula)

______________________ 12. a training principle that says to reach a specific fitness goal you must train your body in a specific way *Example*: to increase strength you lift weights

______________________ 13. the ability of the whole body to perform at maximum capability

______________________ 14. the ability to combine strength and speed in a movement

______________________ 15. a muscle spasm caused by intense heat or lack of adequate fluid intake

______________________ 16. the ability to move your body quickly from one point to another

______________________ 17. to sit or rest a great deal or to take little exercise

____________________ 18. movements that help a person in any physical activity, particularly sports and recreation: agility; balance; coordination; power; reaction time; and speed

____________________ 19. the most serious illness due to heat—considered a medical emergency; body stops sweating and exhibits a dangerously high body temperature

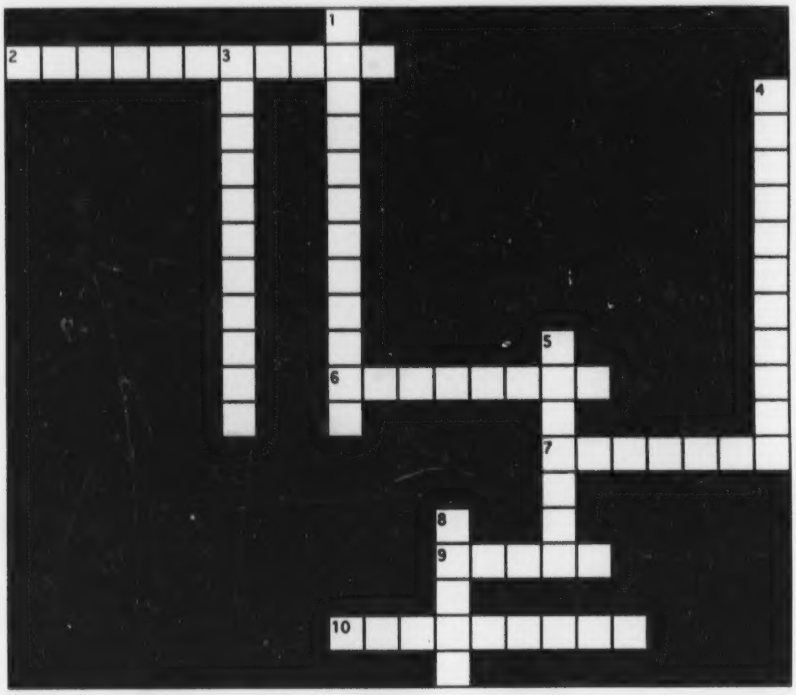
____________________ 20. the formula used to achieve overload and increase your level of physical fitness

____________________ 21. the time required to start a movement after being alerted to the need to move

Physical Fitness

Solve

Use the following clues to solve the crossword puzzle below.



Across

2. a training principle that says you must gradually increase the amount of work performed by the body to improve physical fitness
6. a training principle that says you must increase the demand on the body slightly beyond its normal level to improve physical fitness
7. the ability to change direction of the whole body quickly and easily
9. the ability to combine strength and speed in a movement
10. to sit or rest a great deal or to take little exercise

Down

1. the ability to use the senses in harmony with the muscles in the body to produce smooth and accurate movements
3. a training principle that says to reach a specific fitness goal you must train your body in a specific way
4. the ability of a joint and muscle group to move through a range of motion
5. a kind of coordination that allows you to maintain control over your body while stationary or moving
8. the ability to move your body quickly from one point to another

2

Body Composition and Nutrition

What's Inside?

Vegetables

Body Composition and Nutrition

Vocabulary

Study the vocabulary words and definitions below.

anorexia nervosa	an eating disorder in which a person refuses to eat and suffers severe weight loss; also called *starvation sickness*
body composition	the amount of fat in the body compared to lean body mass; one of the measurements of your physical fitness
bulimia	an eating disorder in which a person overeats and then vomits, or uses diuretics or laxatives to get rid of the food before it is digested
calorie	the measure of heat or energy contained in a food; 3500 calories equal one pound of fat
carbohydrate	an essential nutrient in many foods that is the body's primary source of energy
diuretics	drugs used to increase the amount of fluids lost through the urine
ectomorph	a body type characterized by a long, lean frame with delicate bones and muscles

Body Composition and Nutrition

endomorph	a body type characterized by a soft roundness with heavy legs, narrow shoulders, and a large chest
fallacy	a mistaken idea; *pl.* fallacies
fat	flabby and untoned tissue; a nutrient in many foods that provides energy and can be stored in the body
ideal body weight	how much you would weigh if your body fat percentage were in the healthy range
lean body mass	the makeup of your body that is muscle, bone, tissue, or organs, but not fat
mesomorph	a body type characterized by a well-proportioned muscular, athletic physique
obese	extremely fat
overfat	having more body fat than desirable
overweight	weighing about 10 percent more than the weight considered desirable for a particular height or age

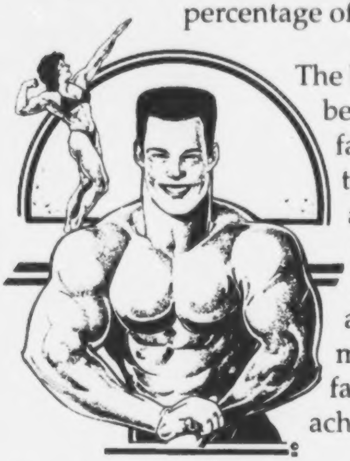
Body Composition and Nutrition

protein	essential nutrients in many foods that are necessary for repairing and building body tissues
skinfold calipers	an instrument used to measure the body fat directly under the skin

Body Composition and Nutrition

Introduction

Many people place far too much emphasis on their body weight. Weight alone is not a good measure of health. A comparison of the amount of **fat** on your body to the amount of **lean body mass** is a much more accurate measure of your health. *Lean body mass* consists of your muscles, bones, and other tissues and organs. Fat appears on the body as flabby and untoned tissue. The proportion of fat in the body to lean body mass is known as ***body composition***. Your body composition is expressed as the body's percentage of fat and its percentage of lean body mass.



The body composition of a fit male teenager should be between nine percent and fifteen percent body fat. The body composition of a fit female teenager should be between fourteen percent and twenty-one percent. Everyone should work towards these healthy ranges. Most Americans need to lower the amount of fat on their bodies and raise the amount of lean body mass, or muscle. Developing a body composition low in fat is one of the most important goals for achieving good health.

You cannot tell whether you carry too much body fat simply by weighing yourself. A weight scale combines both your lean body mass and your body fat into one measure.

Overweight, Overfat, Obese, or Ideal?

A person who is **overweight** weighs approximately 10 percent more than is desirable. An **overfat** person has more body fat than he should have.

However, a person who weighs more than the suggested amount on a height-weight chart is not necessarily *overfat*. These charts are figured for people who have an average percentage of body fat. But some people such as body builders and other muscular athletes will have a very low percentage of body fat. Most of their body is made of muscle. Muscle tissue is heavier and weighs more than an equal amount of fat tissue. Consequently, these very fit athletes will weigh more than the height-weight charts suggest.

On the other hand, a person who appears slim and lean may actually have too much body fat. He or she may have a low body weight because fat tissue weighs less than muscle tissue. This body composition is often seen in people who diet to avoid being overweight but do not exercise or achieve physical fitness. The amount of body fat we carry is not always obvious. We cannot tell by our looks or even by the pounds we register on a scale.

An **obese** person is extremely fat. A Sumo wrestler or fat lady in the circus would be considered *obese*.

Working towards a certain body weight should not be our goal. Weighing the ideal amount for our height will not make our bodies healthy, fit, or low in body fat. A far more important goal is to eat a nutritious diet and get regular exercise. Together, these practices will lead to a healthy body composition.

Ideal Body Weight: What Should I Weigh?

Your ***ideal body weight*** is how much you should weigh if your body fat percentage were in the proper range. There are simple formulas that are helpful in determining about what you should weigh. You will most likely look and feel the best—and be the healthiest—at your ideal body weight.

Acceptable Ranges of Body Fat

Age	Male	Female
up to 30 yrs.	9—15%	14—21%
30—50 yrs.	11—17%	15—23%
50 yrs. & up	12—19%	16—25%

Body Composition and Nutrition

Body Types: Ectomorph; Endomorph; and Mesomorph

When it comes to body types we are not all created equal! Everyone comes in a different size and shape. Our genetics, gender, and even lifestyles make each of us unique. However, some of us can be described as having one of three standard body types: the **ectomorph**; **endomorph**; or **mesomorph**. Most of us are a combination of two body types.

Ectomorph: Long and Lean

This body type is familiar in long-distance runners and fashion models. An ectomorph is usually long and lean with delicate bones and muscles. Ectomorphs usually have a low body weight and a low percentage of body fat.

Mesomorph: Trim and Athletic

The mesomorph has a well-proportioned build. He has medium to large bones and solid muscular development throughout his body. Body fat is usually within the desirable ranges. Many athletes are considered mesomorphs.

Endomorph: Round and Soft

The endomorph's body is soft and round. He has thick, heavy legs, narrow shoulders, and a large chest. He carries a high percentage of body fat at and below the waist, creating a bottom-heavy look.

The Typical Body Type: A Combination of Two Body Types

Most of us can be classified as a combination of two of the basic body types. For example, an individual who is naturally muscular and well proportioned but has extra body fat would be a meso-endomorph. This body type is typical of heavy power lifters and Sumo wrestlers.

The only combination that cannot occur is the endo-ectomorph.

Body Composition and Nutrition

Heredity determines to a large extent what basic body type you will tend to be. However, exercise patterns and eating habits largely influence your body type as well.

Apple or a Pear?

When people gain excess weight they often develop one of two body shapes. These shapes are referred to as the *apple* and the *pear*.

Apple. The apple-shaped person carries most of his extra weight in the chest and abdomen. Apples tend to be males and usually have pot bellies. Research has shown that the apple-shaped person is at greater risk for heart disease, diabetes, and certain cancers.

Pear. The pear-shaped person tends to store body fat below the waist. They carry extra fat in the thighs, hips, and buttocks. A pear shape is more common in females.

Check your own body shape using the waist-to-hip ratio below.

Waist-To-Hip Ratio

1. Measure your waist at its smallest point.

   Waist measurement: __________ inches

2. Measure your hips where they are the largest.

   Hips measurement: __________ inches

3. Divide the waist measurement by the hips measurement to determine your waist-to-hip ratio.

   waist ÷ hips measurement = waist-to-hip ratio

   Example: waist = 28 inches; hips = 40 inches

   28 ÷ 40 = 0.70 waist-to-hip ratio

   ________ ÷ ________ = ________ waist-to-hip ratio

Body Composition and Nutrition

According to the American Heart Association (AHA), a waist-to-hip ratio of greater than 0.80 for women and 0.95 for men may increase the risk for several diseases.

Importance of Weight Control

One in every three Americans is either overfat or obese. It is a simple fact that carrying extra fat on your body increases your energy needs. Carrying extra fat also raises your risk for developing health-related problems.

Maintaining a proper body weight helps a person feel and look good. It also helps a person to be at his mental and physical best.

The following are some health problems associated with carrying too much body fat:

- A diet high in fat can lead to arteriosclerosis (hardened arteries).
- Arteriosclerosis reduces the blood supply to vital organs.
- Arteriosclerosis raises blood pressure.

Regular exercise and a healthy diet are the keys to maintaining a healthy body composition.

Arteriosclerosis and High Blood Pressure can lead to...

Stroke
Damaged kidneys
Heart attack
Breathing difficulties
Problems during surgery
Diabetes
Infections
Problems during pregnancy
Certain cancers
Shortened life
Decreased quality of life

Methods of Measuring Body Composition

Estimating body fat percentages can be done using different methods. The quickest and simplest methods use skinfold and body measurements. More complex methods include underwater weighing, electrical impedance, and ultrasound.

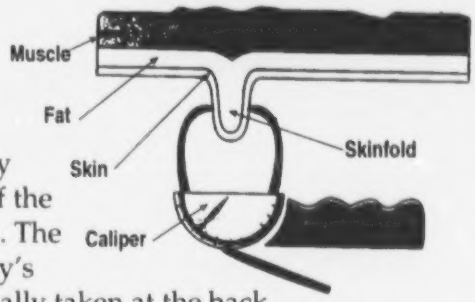
Body Composition and Nutrition

Estimating body fat percentage is not an exact science. All methods used to determine body fat are approximations. However, body fat and body measurements are more accurate ways to track your progress than weighing yourself on a scale is.

Skinfold Measurements: Pinching Fat

Taking *skinfold measurements* is a very common and convenient method used to measure body fat. The skinfold technique pinches fat from various sites on the body with instruments called ***skinfold calipers***. The skinfold calipers measure the fat that lies directly under the skin. It is believed that half of the fat in our body lies right under the skin. The remaining half is deep within your body's organs. Skinfold measurements are usually taken at the back of the arm, at the waist or hip, chest, and thigh area. (See activity *Skinfold Measurements,* p. 68.)

Caliper Skinfold Measurement



Underwater Weighing: Measuring the Water a Body Displaces

Underwater weighing is considered the "gold standard" and the most valid method of measuring body composition. However, it is expensive and inconvenient. This method measures the amount of water that is displaced, or pushed up, when a person is under water. A person who has more body fat will displace more water than a person of equal weight who has less body fat.

Electrical Impedance: Passing Electrical Currents through the Body

In the *electrical impedance* method, the speed of an electrical current is measured as it passes through the body. The faster the flow, the higher proportion of fat in the body.

Body Mass Index (BMI): Estimating Body Fat

The body mass index (BMI) is a commonly used method to estimate body fat. It compares your height and weight and predicts your body fat. (See activity *Body Mass Index,* p. 72.)

Body Composition and Nutrition

Improving Body Composition: Losing Body Fat

The best approach to losing body fat combines regular exercise with a sensible nutritional plan.

To lose a pound of fat you must lose or burn 3500 **calories**. You could lose a pound of fat by eating 3500 fewer calories than you normally do. Or you could burn 3500 calories through execise. The average teenager's daily diet is about 3500 calories. But simply going an entire day without food is a dangerous and unsuccessful way to lose fat. Similarly, the average person cannot safely burn 3500 calories in a day or even two days of exercise. The healthiest approach to losing body fat and *keeping it off* combines moderate exercise and a *slight* reduction of daily calories. This approach leads to a healthy and gradual loss of fat.

Dieting without Exercising

Dieting without exercise to reduce body weight can produce a loss of pounds on the scale. However, when exercise is not included in a weight-loss program, the body loses fat *and* valuable muscle tissue. Drastically reducing calories in the daily diet causes the body to think it is starving. When the body is starved, it reacts by breaking down its own muscle tissues. In addition, the body will try to save energy by burning *fewer* calories!

Exercising without Dieting

For a weight-loss program to be successful, exercise is vital. Exercise preserves the lean muscle tissue. Preserving and increasing the amount of lean tissue helps you keep off the excess weight. Lean tissue consumes more calories than an equal amount of fat tissue. Lean tissue is, therefore, very valuable in losing and maintaining weight.

Exercise is the most important way to make long-term changes in your body composition. Your body will be leaner, stronger, and more toned. Try to strive for daily exercise, expending at least 300 calories per workout. (See activity *Calorie Usage in Various Activities,* p. 79.)

To trim down, decrease your food intake and maintain a daily exercise program. If exercise is the only thing that is added or increased, weight loss will be a slow process. A change in nutritional habits needs to go hand-in-hand with workouts to achieve results.

The Eating Right Food Pyramid

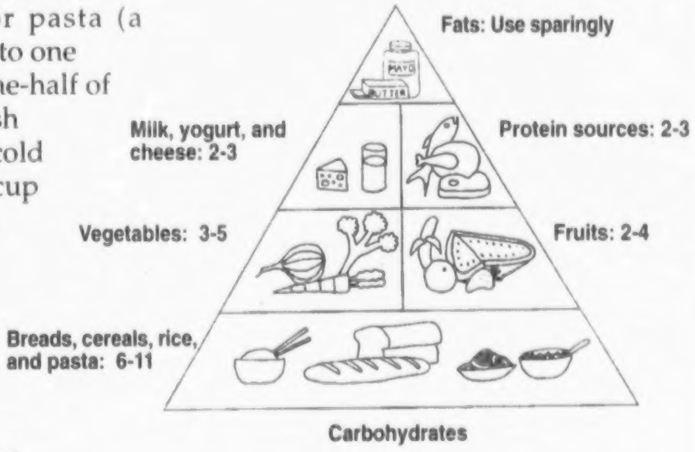
The United States Department of Agriculture (USDA) and the United States Department of Health and Human Services have developed guidelines for helping Americans choose better eating habits. These easy-to-follow guidelines suggest that most of our calories come from carbohydrates such as cereals, bread, rice, and pasta. The rest of our calories should come from fruits and vegetables, dairy products, and lean meat, fish, poultry, beans or nuts. We should eat fats, oils, and sweets sparingly.

The Food Guide Pyramid recommends the following daily guidelines:

- Six to eleven servings of carbohydrates—breads, cereals, rice, or pasta (a serving is equal to one slice of bread, one-half of a bagel or English muffin, one oz. cold cereal, one-half cup of rice or pasta)
- Two to four servings of fruit (a serving is equal to one medium apple, orange, or banana, one-half cup of canned fruit, three-fourths cup of juice)

The Food Pyramid

(Suggested number of servings per day)


Fats: Use sparingly
MAYO
BUTTER
Milk, yogurt, and cheese: 2-3
Protein sources: 2-3
Vegetables: 3-5
Fruits: 2-4
Breads, cereals, rice, and pasta: 6-11
Carbohydrates

- Three to five servings of vegetables (a serving is equal to one cup of raw, leafy greens, one-half cup of other vegetables, three-fourths cup of vegetable juice)
- Two to three servings of dairy (a serving is equal to one cup of milk or yogurt, one and one-half ozs. cheese)
- Two to three servings of meat, beans, eggs, or nuts (a serving equals two to three ozs. of lean meat, fish, or poultry, one egg, one-half cup cooked dried beans)

Nutrition Facts and Fallacies

It is often confusing to know what to believe about diet and exercise. A **fallacy** is a mistaken idea, often believed by many people. Here are several of the most commonly believed fallacies followed by the real facts.

Fallacy: I can just go on a popular or fad diet to lose weight.

Fact: Dieting alone may help you to lose weight temporarily, but the weight is usually gained back. Fad diets are diets that promise fast weight loss. Only a lifetime commitment to eating low-fat healthy foods and getting regular exercise guarantees success.

Tips...

For Healthy Eating and Weight Control

Eat a variety of nutrient-rich foods.

Eat plenty of whole grains, fruits, and vegetables.

Eat moderate portions and be aware of what a serving size consists of.

Choose foods that are low in fat.

Use salt and sugar in moderation.

Make changes in your diet gradually.

Eat smaller, more frequent meals, and spread them evenly throughout the day.

Eat the majority of your food early in the day with your evening meal the smallest.

Eat slowly to give your stomach a chance to feel full.

Avoid second helpings.

Broil, bake, boil, steam, or barbecue rather than fry or saute.

Snack on healthy, low-fat foods such as popcorn, pretzels, low-fat crackers, and fruit.

Drink a glass or two of water before a meal to help diminish your appetite.

Learn to read food labels.

Eat from smaller plates to make food portions appear larger.

Keep a food diary to help you evaluate your diet.

Enlist encouragement from a close friend or family member.

Find an exercise partner you can count on.

Eat only in a specified place in the house.

Avoid fad diets that don't include the proper nutrients your body needs.

Avoid losing more than two pounds of weight per week.

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Fallacy: Certain foods, diet pills, or **diuretics** can help burn fat calories, promoting weight loss.

Fact: No foods burn fat. Diuretics are drugs that increase the amount of fluid lost through urine. Diet pills or diuretics may help you lose water weight. However, pounds lost from water weight are not body fat.

Fallacy: Sugar is a good source of quick energy.

Fact: Sugary foods may give you an immediate energy boost, but it is short-lived. The rapid rise of the blood sugar level is followed by a feeling of hunger, irritability, and sleepiness.

Fallacy: During exercise you should drink water only when you feel thirsty.

Fact: Your body can become dehydrated before you feel thirsty. Serious problems, including death, can result if fluid intake is inadequate. It is important to drink water before, during, and after exercise.

Fallacy: Adding more **protein** to my diet will help me build muscle.

Fact: A normal diet supplies plenty of protein for muscle growth. Regular exercise training of specific muscle groups and a balanced diet increases muscle mass and strength. An excessive amount of protein is stressful to the kidneys. Like excess fat or **carbohydrate** in the diet, too much protein will be stored as fat.

Fallacy: *Fasting*, or skipping meals, will help me to lose weight.

Fact: Abstaining from food, or fasting, will not help you to lose fat weight. When you skip meals your body is forced into a starvation mode. It will use up important calorie-burning muscle tissue to survive. Your body will slow down and begin to store fat even more efficiently than before.

Fallacy: Vitamins will give me more energy.

Fact: Vitamins do not supply energy, but only help the body to use energy. Energy is supplied by food in the form of calories. Vitamin supplements may be helpful for individuals with special needs. But, for an average, healthy person, a well-balanced diet supplies sufficient nutrients.

Fallacy: Muscle cramps indicate a lack of salt intake.

Fact: Muscle cramping is often caused by severe water loss from sweating or over exercising. Salt tablets can worsen this condition. They draw more water out of the muscle and into the stomach.

Fallacy: Heavy people eat more than skinny ones.

Fact: Not necessarily. Heavy people often eat *less* than lean individuals. Their bodies, however, have adjusted to a low-calorie intake. When they do overeat, they easily gain weight.

Fallacy: You only burn a high rate of calories while you exercise.

Fact: Exercise helps make your body a better fat-burning machine. Regular exercise helps you continue burning a high rate of calories even after you stop exercising.

Fallacy: Exercise increases your appetite.

Fact: Exercise actually blunts your appetite temporarily. More exercise means your body needs more nutrients. Exercise helps you to regulate calorie intake to appropriate levels.

Fallacy: Breads, rice, pasta, and other *carbohydrates* are fattening.

Fact: Whole grain carbohydrates such as breads, pasta, rice, and cereals have less than half the calories of fat. They are the best source of energy during physical activity. It is what is added to carbohydrates, such as butter and sour cream, that makes some foods fatty.

Eating Disorders: When Food Becomes an Enemy

Over a million Americans suffer from eating disorders. Poor eating habits and obsessive dieting can lead to serious health problems.

One type of eating disorder, known as *starvation sickness,* is called ***anorexia nervosa.*** It is characterized by severe weight loss and refusal to eat.

Another eating disorder that threatens the health of many people is **bulimia.** The bulimic individual often eats large amounts of high-calorie foods. After overeating, the individual vomits or uses laxatives to get rid of the food before it is digested.

People with these disorders think they are overweight, even when they may actually be very thin. These eating disorders can cause chronic health problems, even death. People with these problems should seek the help of a professional.

Body Composition and Nutrition

Summary

Many people place far too much emphasis on their body weight. Weight alone is not a sufficient measure of health. The percentage of your body weight that is body *fat* is a much more important indicator of health. The proportion of *lean body mass* to fat in the body is known as *body composition*. Seeing the relationship between body weight, body shape, and disease has helped us understand the importance of body composition in achieving good health. Carrying an excessive amount of body fat, or being *overfat* or *obese*, puts us at high risk for many diseases.

To improve body composition you should combine diet and regular exercise. It takes a reduction of 3500 *calories* to lose a pound of fat. To lose fat rather than muscle, you should exercise *and* take in fewer nutritious calories.

To achieve good health and a lean, fit body, a low-fat diet and regular exercise are the key ingredients.

Over a million Americans suffer from *anorexia nervosa* or *bulimia*. These eating disorders can cause health problems. Victims of these disorders need professional help.

Fitness Career Opportunity!

The Sports Nutritionist

Advise athletes and others on how to eat for optimal fitness and peak performance. They often work in universities, for sports teams, health clubs, or corporate or wellness centers.

Clients tend to seek out sports nutritionists for a variety of reasons. Some of the more common reasons are:

- To gain or lose weight
- To optimize athletic performance
- To increase energy and endurance
- To improve overall eating habits

In seeking out a sports nutritionist, it is advisable to look for a registered dietician (R.D.) who belongs to The American Dietetic Association. For a free state-by-state listing of registered dieticians call the ADA National Center for Nutrition and Dietetic Hotline (800-366-1655)

For information concerning Sports Nutrition, contact:

International Center for Sports Nutrition
Omaha, Nebraska
(402) 559-5505

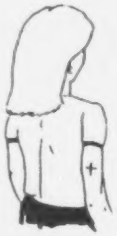
Skinfold Measurements

To determine your percent of body fat, first find a partner. Decide who will be measured first.

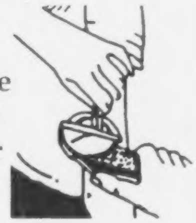
Measure two skinfolds on the body: the triceps, or the back of the arm, and the calf in the lower leg. Use the right side of the body for all measurements.

Procedure for Triceps Skinfold Measurement

1. Find the middle point between the shoulder and elbow on the back of the right arm. Mark it with an "X" using a marking pencil.



2. Lift the skin away from the muscle, grasping it right above the marked area. Pinch the skinfold with your finger and thumb. (It is not necessary to pinch hard.)
3. Using the skinfold calipers, measure the thickness of the skinfold. Repeat the measurement two more times, and record the average of the three to the nearest millimeter (mm).

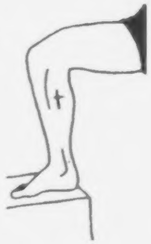


_________ + _________ + _________ = _________ ÷ 3 = _________ mm

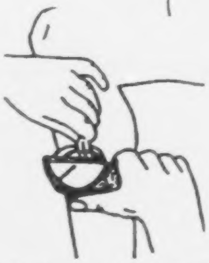
My triceps skinfold measurement was _________ mm.

Procedure for Calf Skinfold Measurement

1. Place your right foot on a step or elevated surface to a bent-knee position of about 90 degrees. Mark an "X" on the inside of the lower leg at the largest part of the calf muscle.



2. Pinch the skinfold just above the marked point, lifting the skin away from the muscle. Measure the thickness of the skinfold with the calipers.



3. Take three total measurements, and record the average of the three to the nearest millimeter.

_______ + _______ + _______ = _______ ÷ 3 = _______ mm

My calf skinfold measurement was _______ mm.

Final Measurement Procedure

Add the triceps measurement and the calf measurement together. Use the sum to determine an approximation of your body fat percentage. Refer to the *Body Composition Conversion Tables* on the following pages.

My final measurement was: triceps + calf = _______ mm.

My body fat percentage is estimated at _______ %.

Analyze your results.

My body fat percentage is: (check one)

_______ lower than the desired range

_______ in the proper range

_______ higher than the desired range

To maintain or improve my body composition I can do the following things:

1. ____
2. ____
3. ____
4. ____
5. ____

Body Composition Conversion Table for Girls*

Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat
1.0	5.7	16.0	14.9	31.0	24.0	46.0	33.2	61.0	42.3
1.5	6.0	16.5	15.2	31.5	24.3	46.5	33.5	61.5	42.6
2.0	6.3	17.0	15.5	32.0	24.6	47.0	33.8	62.0	42.9
2.5	6.6	17.5	15.8	32.5	24.9	47.5	34.1	62.5	43.2
3.0	6.9	18.0	16.0	33.0	25.2	48.0	34.4	63.0	43.5
3.5	7.2	18.5	16.4	33.5	25.5	48.5	34.7	63.5	43.8
4.0	7.5	19.0	16.7	34.0	25.8	49.0	35.0	64.0	44.1
4.5	7.8	19.5	17.1	34.5	26.1	49.5	35.3	64.5	44.4
5.0	8.2	20.0	17.3	35.0	26.5	50.0	35.6	65.0	44.8
5.5	8.5	20.5	17.6	35.5	26.8	50.5	35.9	65.5	45.1
6.0	8.8	21.0	17.9	36.0	27.1	51.0	36.5	66.0	45.4
6.5	9.1	21.5	18.2	36.5	27.4	51.5	36.5	66.5	45.7
7.0	9.4	22.0	18.5	37.0	27.7	52.0	36.8	67.0	46.0
7.5	9.7	22.5	18.8	37.5	28.0	52.5	37.0	67.5	46.3
8.0	10.0	23.0	19.1	38.0	28.3	53.0	37.4	68.1	46.6
8.5	10.3	23.5	19.4	38.5	28.6	53.5	37.7	68.5	46.9
9.0	10.6	24.0	19.7	39.0	28.9	54.0	38.0	69.0	47.2
9.5	10.9	24.5	20.0	39.5	29.2	54.5	38.3	69.5	47.5
10.0	11.2	25.0	20.4	40.0	29.5	55.0	38.7	70.0	47.8
10.5	11.5	25.5	20.7	40.5	29.8	55.5	39.0	70.5	48.1
11.0	11.8	26.0	21.0	41.0	30.1	56.0	39.3	71.0	48.4
11.5	12.1	26.5	21.3	41.5	30.4	56.5	39.6	71.5	48.7
12.0	12.4	27.0	21.6	42.0	30.7	57.0	39.9	72.0	49.0
12.5	12.7	27.5	21.9	42.5	31.0	57.5	40.2	72.5	49.6
13.0	13.0	28.0	22.2	43.0	31.3	58.0	40.5	73.0	49.6
13.5	13.3	28.5	22.5	43.5	31.6	58.5	40.8	73.5	49.9
14.0	13.6	29.0	22.8	44.0	31.9	59.0	41.1	74.0	50.2
14.5	13.9	29.5	23.1	44.5	32.2	59.5	41.1	74.5	50.5
15.0	14.3	30.3	23.4	45.0	32.6	60.0	41.7	75.0	50.9
15.5	14.6	30.5	23.7	45.5	32.9	60.5	42.0	75.5	51.2

**Use this table to determine percent body fat for all girls ages 5 to 18.*

Body Composition Conversion Table for Boys*

Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat	Total (millimeters)	Percent Fat
1.0	1.7	16.0	12.8	31.0	23.8	46.0	34.8	61.0	45.8
1.5	2.0	16.5	13.1	31.5	24.2	46.5	35.2	61.5	46.2
2.0	2.5	17.0	13.5	32.0	24.5	47.0	35.5	62.0	46.6
2.5	2.8	17.5	13.9	32.5	24.9	47.5	35.9	62.5	46.9
3.0	3.2	18.0	14.2	33.0	25.3	48.0	36.3	63.0	47.3
3.5	3.6	18.5	14.2	33.5	25.6	48.0	36.3	63.0	47.3
4.0	3.9	19.0	15.0	34.0	26.0	49.0	37.0	64.0	48.0
4.5	4.3	19.5	15.3	34.5	26.4	49.5	37.4	64.5	48.4
5.0	4.7	10.0	15.7	35.0	26.7	50.0	37.8	65.0	48.8
5.5	5.0	20.5	16.1	35.5	27.1	50.5	38.1	65.5	49.1
6.0	5.4	21.0	16.4	36.0	27.5	51.0	38.5	66.0	49.5
6.5	5.8	21.5	16.8	36.5	27.8	51.5	38.9	66.5	49.9
7.0	6.1	22.0	17.2	37.0	28.2	52.0	39.2	67.0	50.2
7.5	6.5	22.5	17.5	37.5	28.6	52.5	39.6	67.5	50.6
8.0	6.9	23.0	17.9	38.0	28.9	53.0	40.0	68.0	51.0
8.5	7.2	23.5	18.3	38.5	29.3	53.5	40.6	68.5	51.3
9.0	7.6	24.0	18.6	39.0	29.7	54.0	40.7	69.0	51.7
9.5	8.0	24.5	19.0	39.5	30.0	54.5	41.1	69.5	52.1
10.0	8.4	25.0	19.4	40.0	30.4	55.0	41.4	70.0	52.5
10.5	8.7	25.5	19.7	40.5	30.8	55.5	41.8	70.5	52.8
11.0	9.1	26.0	20.1	41.0	31.1	56.0	42.2	71.0	53.2
11.5	9.5	26.5	20.5	41.5	31.5	56.5	42.5	71.5	53.6
12.0	9.8	27.0	20.8	42.0	31.9	57.0	42.9	72.0	53.9
12.5	10.2	27.5	21.2	42.5	32.2	57.5	43.3	72.5	54.3
13.0	10.6	28.0	21.6	43.0	32.6	58.0	43.6	73.0	54.7
13.5	10.9	28.5	21.9	43.5	33.0	58.5	44.0	73.5	55.0
14.0	11.3	29.0	22.3	44.0	33.3	59.0	44.3	74.0	55.4
14.5	11.7	29.5	22.7	44.5	33.7	59.5	44.7	74.5	55.8
15.0	12.0	30.0	23.1	45.0	34.0	60.0	45.1	75.0	56.1
15.5	12.4	30.5	23.4	45.5	34.4	60.5	45.5	75.5	56.5

**Use this table to determine percent body fat for all boys ages 5 to 18.*

Body Composition and Nutrition

Body Mass Index

The *Body Mass Index* (BMI) is a quick and easy way to determine a healthy weight without referring to the standard charts.

On the *BMI* chart on page 73, place one end of a ruler on your height and the other end on your weight. Read your body mass index where the ruler crosses the middle line in the chart. Note that the range for women is on the left side of the index and the range for men is on the right of the index.

The desirable range for females is generally 21 to 23.

The desirable range for males is generally 22 to 24.

If you possess a lot of muscle mass, your BMI may tend to appropriately be a bit higher. A high BMI is associated with a greater risk for cardiovascular disease and diabetes.

Results:

My body mass index is ______________ .

To determine an approximation of your proper weight, place the ruler at your height and at the desirable body mass index (BMI) range. Your target weight will appear where the ruler crosses the left column.

My proper weight according to this formula should be

approximately _________ pounds.

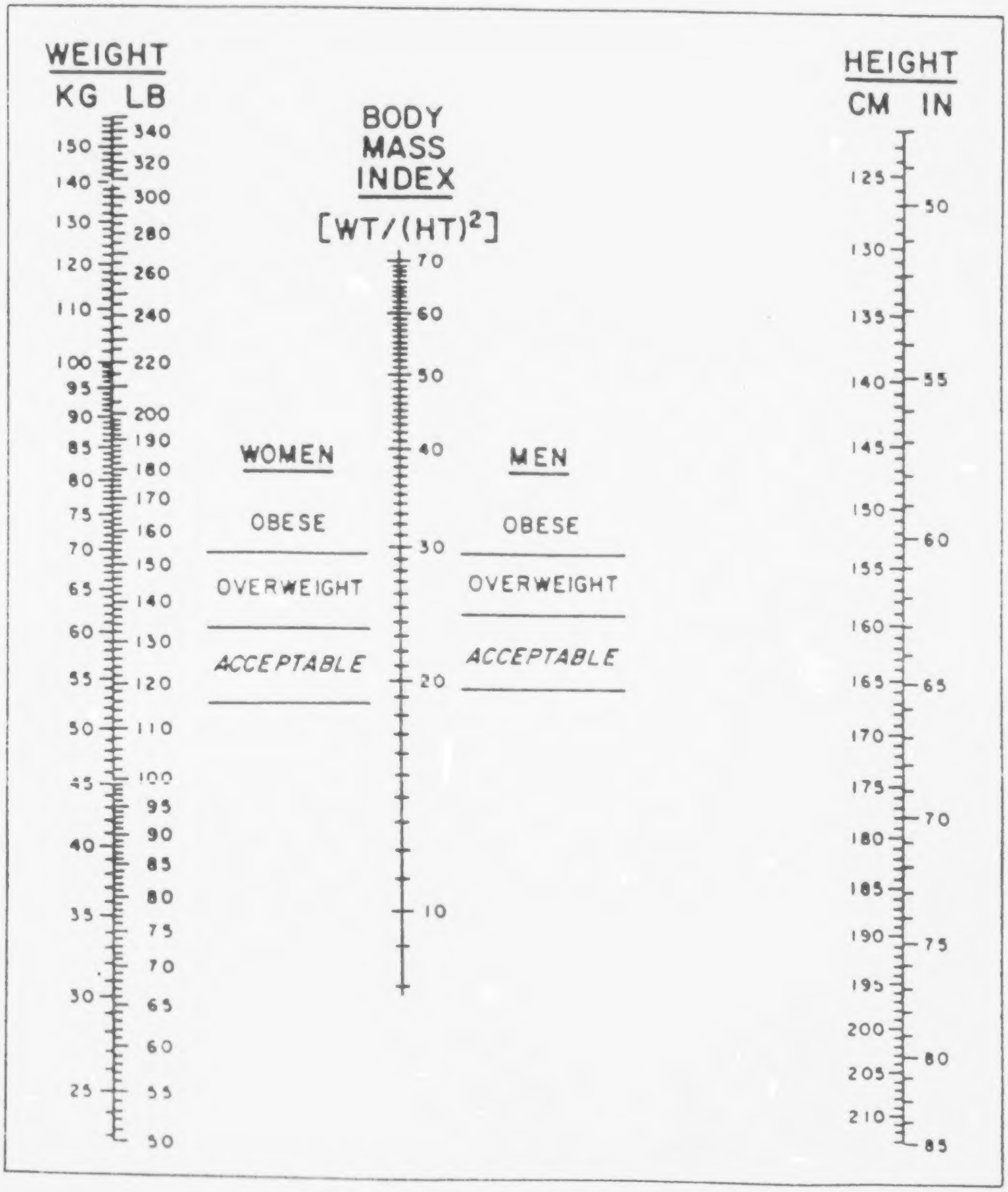
Do you believe this is an accurate measure of your proper body

weight? ____

Why or why not? ____

____

Body Mass Index



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Figuring Ideal Body Weight: Height

One common method used to determine appropriate body weight is based upon your height. This gives you a very basic approximation of how much you should weigh.

Formula

Females: 100 pounds for five feet and add an additional five pounds for each inch of height over five feet.

For example, a female who is five feet and five inches would estimate her ideal body weight as 125 pounds. (100 lbs. + [5 x 5 lbs.] = 125 lbs.)

Males: 106 pounds for five feet and add an additional five pounds for each inch of height over five feet.

A male who is five feet and nine inches would estimate his ideal body weight as 151 pounds. (106 lbs. + [9 x 5 lbs.] = 151 lbs.)

Figure your ideal body weight using the formula above.

1. I currently weigh __________ pounds.
2. I am __________ feet and __________ inches tall.
3. According to this formula I should weigh __________ pounds.
4. Analyze your results. How does this formula compare to your current body weight? ______________________________

   ____

   Does this formula seem to be appropriate for you? __________

   Why or why not? ______________________________

   ____

Body Composition and Nutrition

Figuring Ideal Body Weight: Frame Size

This is another simple way to estimate your ideal body weight based upon your frame size. Follow these easy steps.

1. With a partner, measure the width of your elbow using the skinfold calipers. The elbow width is measured by bending the elbow 90 degrees, and then measuring the distance across from the two knobby protrusions on each side of the elbow.
2. Refer to the *Frame Size Chart* on page 77 to determine whether you are a small, medium, or large frame.
3. Once you have determined your frame size, refer to the *Height/ Weight Chart* on page 78 for determining the suggested optimal weight range.

Record Your Scores:

1. According to the *Frame Size Chart*, I have a ____________ frame.
2. According to the *Height/Weight Chart* for determining a suggested optimal weight range, I should weigh between ____________ .
3. Analyze your results.

   Do you feel this calculation is accurate for you? ________ Explain your answer. ____

   ____

   What do you think is your main body type (ectomorph, endomorph, or mesomorph)? ______________________________

   Could you be a combination of two types? Explain. ____________

   ____

Figuring Ideal Body Weight: Body Fat Percentage

To determine ideal body weight using this formula, you must know your body fat percentage. Use the percentage of body fat found on the skinfold measurement test.

Follow these steps to determine a desirable body-weight range for you.

Example: A female, weighing 105 lbs. with 20% body fat, has a desired body weight range between 98 and 106 lbs.

1. **Find the lean body percentage.**

   100% – Fat percentage = Lean body Percentage (%)

   100% – 20% = 80% (Lean body Percentage)

2. **Find the lean body weight in pounds.**

   Body weight x Lean body Percentage = Lean body Weight (lbs.)

   105 x 80% = 84 lbs. (Lean body Weight)

3. **Use the table below to find the desired lean percentage.**

   100% – Desired Percent Fat = Desired Lean Percent (%)

Female:		**Male:**	
Upper limit:	100 – 21 = 79%	Upper limit:	100 – 15 = 85%
Lower limit:	100 – 14 = 86%	Lower limit:	100 – 9 = 91%

4. **Find the desired body weight range in pounds.**

   Lean Body Weight ÷ Desired Lean Percentage =
   Desired Body Weight Range (lbs.)

   84 ÷ 79% = 106 lbs. (Upper Limit)
   84 ÷ 86% = 98 lbs. (Lower Limit)
   98 lbs. – 106 lbs. = Desired Body Weight Range

Use the formula above to figure your ideal body weight.

Frame Size Chart

Women

Height	Small Frame	Medium Frame	Large Frame
5' 0" & below	less than 54mm	54–67mm	more than 67mm
5' 1" to 5" 8"	less than 56mm	56–70mm	more than 70mm
5' 9" & above	less than 58mm	58–72mm	more than 72mm

Men

Height	Small Frame	Medium Frame	Large Frame
5' 0" & below	less than 63mm	63–76mm	more than 76mm
5' 5" to 6' 1"	less than 67mm	67–81mm	more than 81mm
6' 2" & above	less than 70mm	70–86mm	more than 86mm

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Height/Weight Chart

Women

Height	Small Frame	Medium Frame	Large Frame
4' 9"	88–90	92–103	100–115
4' 10"	90–97	94–106	102–118
4' 11"	92–100	97–109	105–121
5' 0"	95–103	100–112	108–124
5' 1"	98–106	103–115	111–127
5' 2"	101–109	106–118	114–130
5' 3"	104–112	109–122	117–134
5' 4"	107–115	112–126	121–138
5' 5"	110–119	116–131	125–142
5' 6"	114–123	120–135	129–146
5' 7"	118–127	124–139	133–150
5' 8"	122–131	128–143	137–154
5' 9"	126–136	132–147	141–159
5' 10"	130–140	136–151	145–164
5' 11"	134–144	140–155	149–169
6' 0"	138–148	144–159	153–173

Men

Height	Small Frame	Medium Frame	Large Frame
5' 1"	107–115	113–124	121–136
5' 2"	110–118	116–128	124–139
5' 3"	113–121	119–131	127–143
5' 4"	116–124	122–134	130–147
5' 5"	119–128	125–138	133–151
5' 6"	123–132	129–142	137–156
5' 7"	127–136	133–147	142–161
5' 8"	131–140	137–151	146–165
5' 9"	135–145	141–155	150–169
5' 10"	139–149	145–160	154–174
5' 11"	143–153	149–165	159–179
6' 0"	147–157	153–170	163–184
6' 1"	151–162	157–175	168–189
6' 2"	155–166	162–180	173–194
6' 3"	159–170	167–185	177–199
6' 4"	163–174	172–190	184–203

Body Composition and Nutrition

Calorie Usage in Activities

Exercise is a great way to expend extra calories while controlling body fat and proper body weight. Try to expend around 300 calories at each workout. Here is a chart to help you in estimating the number of calories burned in various activities. Use the column that comes closest to your body weight to approximate calories expended.

Burning Calories

Activity	Calories Burned Per Hour At Approximate Weight		
	75 lbs	100 lbs	150 lbs
Aerobic class	300	336	360
Bicycling, 6 mph	135	160	240
Bicycling, 12 mph	225	270	410
In-Line Skating	162	216	324
Jogging, 5.5 mph	365	440	660
Jogging, 7 mph	510	610	920
Jumping Rope	415	500	750
Running in place	360	430	650
Running, 10 mph	710	850	1280
Swimming, 25 yds/min	155	185	275
Swimming, 50 yds/min	270	325	500
Tennis (singles)	220	265	400
Walking slowly, 2 mph	125	160	240
Walking moderately, 3 mph	175	210	320
Walking briskly, 4.5 mph	245	295	440
Weight lifting	225	300	450

Figuring Calorie Use in Activities

Example: Activity: **Brisk walking (150 lb. person)**

Number of calories per hour **(440)** x number of hours **(2)** = **880** calories

Activity: ______________________________

No. of calories per hour _____ x no. of hours _____ = _____ calories

Body Composition and Nutrition

Matching

Match each **term** *in the left-hand column to its* **description** *in the right-hand column.*

Term

____ 1. lean body mass

____ 2. ideal body weight

____ 3. body composition

____ 4. obese

____ 5. overfat

____ 6. anorexia nervosa

____ 7. bulimia

____ 8. skinfold calipers

____ 9. mesomorph

____ 10. ectomorph

____ 11. endomorph

Description

A. extremely overfat

B. well-proportioned, muscular, athletic body

C. instrument used to measure the skinfold of body fat directly under the skin

D. your weight if your body fat percentage were in the appropriate range

E. muscle, bone, tissue, or organs, not fat

F. proportion of fat on your body to lean body mass

G. more body fat than desirable

H. *starvation sickness*

I. long, lean frame with delicate bones and musculature

J. soft roundness with heavy legs, narrow shoulders, and a large chest

K. eating excessively, then inducing vomiting; abusing laxatives or diuretics

Body Composition and Nutrition

Multiple Choice

Circle the letter of each correct answer.

1. __________ is the best method for losing body fat and weight.

   a. Dieting alone
   b. Exercise alone
   c. A combination of diet and exercise
   d. None of the above

2. Being very overfat is called __________ .

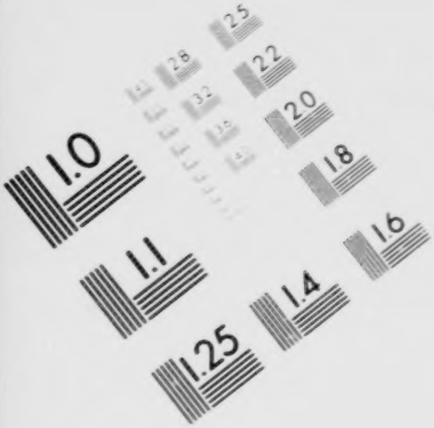
   a. overweight
   b. obese
   c. ideal weight
   d. body composition

3. An instrument used to measure the amount of body fat is a __________ .

   a. calorie
   b. fallacy
   c. skinfold calipers
   d. fat grabber

4. __________ is the part of your body mass that is muscle, bone, tissue, or organs, not fat.

   a. Lean body mass
   b. Obese body mass
   c. Body composition
   d. Body fatness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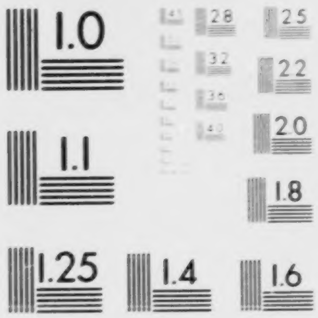
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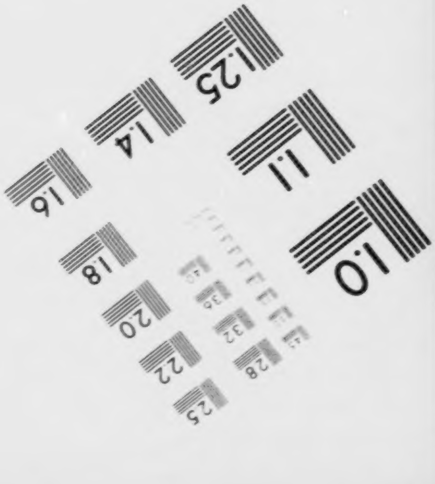
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5. Weighing 10 percent more than the standard charts consider desirable for your age and height is called ____________ .

   a. overweight
   b. overfat
   c. obese
   d. lean

6. A health-related component of physical fitness that compares the amount of fat on your body to the lean body mass is called ____________ .

   a. ideal body weight
   b. lean body mass
   c. body fatness
   d. body composition

7. Bulimia is an eating disorder characterized by ____________ .

   a. eating excessively
   b. abusing laxatives
   c. inducing vomiting
   d. all of the above

8. When your body fat percentage is in the appropriate range, your weight is called ____________ .

   a. perfect weight
   b. ideal body weight
   c. maximum weight
   d. ideal poundage

9. A fallacy is ____________ .

   a. the truth
   b. a mistaken idea
   c. the best way
   d. factual

10. Drugs that increase the amount of fluids lost through the urine are __________ .

    a. calories
    b. laxatives
    c. steroids
    d. diuretics

11. Although __________ tend to weigh more than is suggested on a height-weight chart, thay are *not* generally overfat.

    a. Sumo wrestlers
    b. weight lifters
    c. a fat lady and fat man
    d. people who diet but do not exercise

12. A(n) __________ body tends to store body fat below the waist, in the thighs, hips, and buttocks.

    a. pear-shaped
    b. apple-shaped
    c. banana-shaped
    d. grapefruit-shaped

13. A(n) __________ body is believed to increase one's risk for heart disease, diabetes, and certain cancers.

    a. pear-shaped
    b. hourglass-shaped
    c. box-shaped
    d. apple-shaped

14. __________ is a fact.

    a. To lose weight I need to go on a fad diet
    b. Sugar can help me with quick energy
    c. I should drink water before, during, and after exercise
    d. Adding protein to my diet will help me develop bigger muscles

15. ____________ is a fallacy.

a. Vitamins will give me more energy
b. Muscle cramps usually occur from severe water loss through sweating
c. Skipping meals or fasting will force my body into a starvation mode
d. Rice, breads, and pasta are good sources of energy during physical activity

Body Composition and Nutrition

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 1. How much you weigh is the most important factor to consider in health and fitness.

__________ 2. A common and convenient way for measuring body fat is underwater weighing.

__________ 3. Muscle is heavier and weighs more than an equal amount of body fat.

__________ 4. You can be overweight according to a height-weight chart but have the proper amount of body fat.

__________ 5. Breads, rice, pasta, and other carbohydrates tend to be higher in fat content than other foods.

__________ 6. It takes 3500 calories to gain or lose a pound of fat.

__________ 7. Bulimia is an eating disorder in which a person starves herself and refuses to eat.

__________ 8. The best method for losing body fat is a combination of a proper diet and regular exercise.

__________ 9. The food pyramid includes dietary guidelines to help us develop healthier eating habits.

__________ 10. Dieting alone is a great way to lose weight and keep off the excess body fat.

__________ 11. Exercise is mainly for people who need to lose weight.

__________ 12. Diuretics are a safe way to help you lose weight and body fat.

__________ 13. People are usually overweight because they eat much more than skinny people.

__________ 14. Skipping meals forces your body to use important muscle tissue to survive.

__________ 15. Women naturally have a higher percentage of body fat than men.

Body Composition and Nutrition

Identification

Write the correct vocabulary term for each definition below.

______________________ 1. a body type characterized by a soft roundness with heavy legs, narrow shoulders, and a large chest

______________________ 2. having more body fat than desirable

______________________ 3. the part of your body that is muscle, bone, or organs, but not fat

______________________ 4. flabby and untoned tissue; a nutrient in many foods that provides energy and can be stored in the body

______________________ 5. the amount of fat in the body compared to lean body mass; one of the measurements of your physical fitness

______________________ 6. a mistaken idea

______________________ 7. an eating disorder in which the individual overeats and then vomits or uses diuretics or laxatives to get rid of the food before it is digested

______________________ 8. an essential nutrient in many foods that is the body's primary source of energy

______________________ 9. a body type characterized by a well-proportioned muscular, athletic physique

____________________ 10. the measure of heat or energy contained in a food

____________________ 11. extremely fat

____________________ 12. an instrument used to measure the body fat directly under the skin

____________________ 13. drugs used to increase the amount of fluids lost through the urine

____________________ 14. essential nutrients in many foods that are necessary for repairing and building body tissues

____________________ 15. a body type characterized by a long, lean frame with delicate bones and muscles

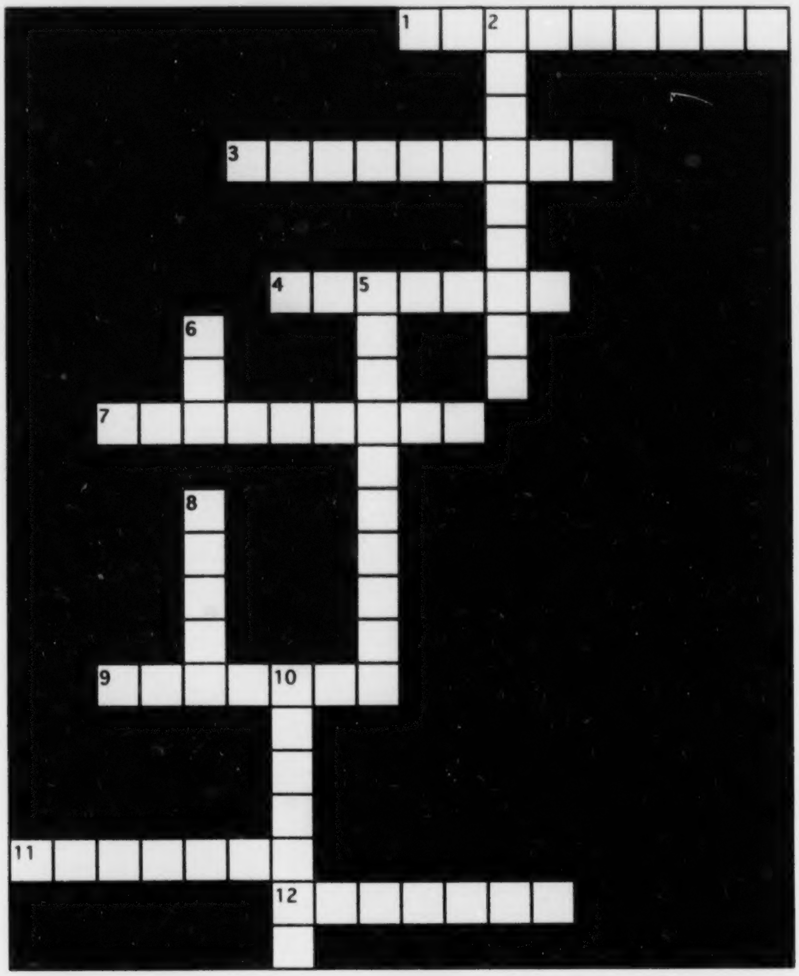
____________________ 16. an eating disorder in which a person refuses to eat and suffers severe weight loss; also called *starvation sickness*

____________________ 17. how much you would weigh if your body fat percentage were in the healthy range

____________________ 18. weighing about 10 percent more than the weight considered desirable for a particular height or age

Solve

Use the clues on the next page to solve the crossword puzzle below.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Body Composition and Nutrition

Across

1. a soft, round body with heavy legs, narrow shoulders, and large chest
3. a well-proportioned muscular, athletic body
4. essential nutrient in many foods for repairing and building body tissues
7. a long, lean frame with delicate bones and muscles
9. having more body fat than desirable
11. an eating disorder in which a person overeats and then vomits, or uses diuretics or laxatives
12. the measure of heat or energy contained in food

Down

2. drugs used to increase the amount of fluids lost through the urine
5. weighing about 10 percent more than the weight considered desirable for a particular height or age
6. flabby and untoned tissue; a nutrient in many foods that provides energy and can be stored in the body
8. extremely fat
10. a mistaken idea

3

Flexibility

What's Inside?

A Track Runner in Start Position

Flexibility

Vocabulary

Study the vocabulary words and definitions below.

ballistic stretching	a type of muscle lengthening that uses bobbing or bouncing to force a muscle past its stretching point
dynamic stretching	a type of muscle lengthening that involves slow, controlled movements past a muscle's stretching point
flexibility	the ability to move joints and muscles through a full *range of motion* without pain or injury
flexion	the bending movement around a joint *Example*: bending the arm at the elbow to bring food to your mouth
joint	the place where two or more bones connect *Examples*: the knee, elbow, and hip
ligament	strong tissues that attach one bone to another bone
muscle	groups of tissue that surround bones and produce physical movements

Flexibility

overload	a training principle that says you must work the body beyond its normal level to increase fitness *Example:* to improve flexibility you must periodically increase the intensity of the stretching point
passive stretching	a type of muscle lengthening in which you rely on a partner for assistance in the stretch
progression	a training principle that says you must gradually increase the amount of exercise performed by the body to increase fitness *Example:* to improve flexibility you must increase the amount of stretching that you do
range of motion	the distance a joint can move without pain or injury
specificity	a training principle that says you must work on the specific part of the body you want to improve *Example:* to increase flexibility in your hamstrings you must do hamstring stretches
static stretching	a type of muscle lengthening that involves slowly moving to a point of muscle tension and then holding that position

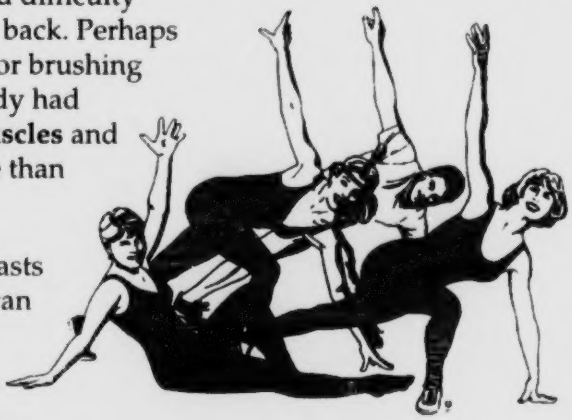
Flexibility

stretching	exercising to lengthen your muscles and improve flexibility
stretching point	the point at which your muscle is being lengthened and at which you begin to feel a slight discomfort
tendon	strong tissues that attach muscle to bone
warm-up	exercises that increase the body's temperature and prepare it for more vigorous activity

Flexibility

Introduction

Have you ever been inactive for a few weeks or even a few days and then found your body tight and painful to move? Have you ever worked your body hard and then awakened the next morning stiff? Perhaps you had difficulty straightening or bending your back. Perhaps leaning over to tie your shoes or brushing your hair felt painful. Your body had become tight because your **muscles** and **joints** had become less flexible than normal.



Have you ever watched gymnasts do splits or backbends? They can contort their bodies into pretzel-like shapes because they regularly work to develop and maintain **flexibility**.

Flexibility is your ability to move your muscles and joints through a full range of motion without pain or injury. When you lose your flexibility, your body can no longer move or bend the way it once could. Your body may no longer be able to run or walk smoothly. Your body may even lose its ability to sit straight in a chair. Flexibility is a health-related fitness component that is important for good health and physical fitness.

How flexible you are depends on how far your muscles will stretch and the distance your joints will move without pain or injury. *Muscles* are the tissue surrounding bones. Muscles lengthen and shorten to move joints. *Joints* are the places where two or more bones connect.

Different joints and muscles in the body move in different ways. Your knees, for example, are hinge joints, and move back and forth like a gate opening and closing. Your neck rotates, or turns from side to side. Your hips and shoulders are ball-and-socket joints that can move up and down or around in a circle. The distance that any joint can move without causing pain or injury is called its ***range of motion***.

Flexibility

By regularly **stretching** your muscles, you can maintain and even increase your flexibility. Stretching for flexibility is an important part of a balanced physical fitness program. Flexibility keeps your joints and muscles in good working order and will help to prevent injuries.

Flexibility: Factors You Can and Cannot Control

Your flexibility is determined by the bone structure of your joints and by the soft tissues that surround your joints. The range of motion of your knees, which only move back and forth, is limited by the way the bones fit together. It is difficult to improve the range of motion of knees.

The range of motion of joints that move in many different directions, such as your ankle and hip, are determined both by the way the bones fit together and by the soft tissues that surround them. Soft tissues include muscles, **ligaments**, and **tendons**. Ligaments are strong tissues that attach bone to bone. They can be stretched, but if they are stretched too far they will tear. Tendons are strong tissues that attach muscle to bone. They cannot be easily stretched. By stretching the muscles around joints such as your hips and ankles and shoulders, you can improve their range of motion.

Your flexibility will be increased or decreased by other factors. Note which of these factors you can control and which you cannot.

- Physically active people usually have greater flexibility than those who do not exercise.
- Females are generally more flexible than males.
- As you age, your flexibility naturally declines. However, with regular stretching, this loss of flexibility can be slowed down.
- Overweight people tend to be less flexible than those who are of average weight.

Flexibility

The Flexible Body: Healthy, Relaxed, Alert, and Aware

A flexible body moves gracefully and easily. The more easily your body can move, the better you will feel about yourself. So flexibility is good for the body and the mind! To maintain or increase your flexibility, you must stretch regularly.

Regular stretching...

- helps to make your daily activities easier and your physical movements more comfortable.
- helps prevent injuries by increasing the range of motion around joints.
- improves performance in physical activities. Athletic skills become smoother and more coordinated as you become more flexible.
- lowers your risk for back pain. Back problems are often the result of poor flexibility in the lower back, hips, and legs.
- minimizes muscle soreness. Stretching after exercise can help to decrease muscle soreness.
- increases relaxation and reduces muscle tension.
- improves your awareness of your body.
- feels good!

The Inflexible Body: Pain, Pain, and More Pain

When you lose your flexibility, your muscles become short and tight. Your everyday activities can feel like a burden because your body is not loose and does not easily bend. If you have watched a person who is bent and walks with a cane, you know how difficult it is to move from place to place in a stiff body. The following are a few of the more common problems tight muscles can cause:

- extreme muscle soreness
- joint or muscle stiffness
- muscle pulls or tears
- low back pain
- neck, shoulder, or back ache
- bad posture
- athletic injuries
- muscle tension and stress
- difficulty moving your body in normal, daily activities.

Methods to Improve Your Flexibility: Static; Passive; Dynamic; and Ballistic Stretching

The only way to improve your flexibility is to do regular and proper stretching. Consistently lengthening the muscles through stretching increases your flexibility. There are several methods of stretching used to increase flexibility: **static stretching**; **passive stretching**; **dynamic stretching**; and **ballistic stretching**.

Static Stretching: Holding a Position

Static stretching involves slowly moving to a **stretching point** and holding that position. The stretching point is the point at which your muscle is being lengthened. It is a safe point of stretching that is slightly uncomfortable, but *not* painful. Static stretching is the *safest* method of stretching to increase flexibility. There are many benefits to static stretching. It requires little energy to perform, it relieves muscle tension and soreness, and it promotes relaxation.

Passive Stretching: Using a Partner

Passive stretching is a type of static stretching in which you rely on a partner for assistance in the stretch. Partner stretching can be an effective method of stretching for tight, sore, or weak muscles. Caution should be taken to prevent the partner from pushing too hard and causing an injury.

Dynamic Stretching: Moving Slowly past the Stretching Point

Dynamic stretching is a type of stretching that involves slow, controlled movements past the stretching point. Dynamic stretching can be helpful for specific sports and activities. It is not recommended for the average individual.

Ballistic Stretching: Bouncing into a Stretch

Ballistic stretching is a type of stretching that uses the body's weight to bob, bounce, or jerk past a muscle's stretching point. While some advanced athletes may find this method beneficial, it is considered risky and dangerous for most people. When performing ballistic stretching, it is easy to overstretch, which can cause extreme muscle soreness, muscle pulls, or tears.

Improving Flexibility Using Training Principles: Overload; Progression; and Specificity

You can improve your flexibility by using some of the same training principles that are used by professional and collegiate athletes and dancers. The **overload, progression**, and **specificity** principles will help you continually improve your flexibility and work the specific joints on your body that are inflexible.

The Principle of Overload—F.I.T.: Frequency; Intensity; and Time

To increase your flexibility, you must stretch your muscles, ligaments, and tendons farther than they are normally stretched. To accomplish *overload* in flexibility training, use the following techniques:

(F) Frequency—stretch at least three times each week

(I) Intensity—stretch the muscle to its stretching point, then hold the stretch in a static stretch for 20 seconds

(T) Time—increase the length of each stretching session, the amount of time a position is held, or the number of times an exercise is executed.

The Principle of Progression: Continually Improving Flexibility

Continually improve your flexibility by applying the F.I.T. formula:

(F) Frequency—increase the number of stretching sessions for each week

(I) Intensity—increase the distance you stretch each muscle as your body becomes more flexible

(T) Time—increase how long the position is held and how many times you perform each stretch.

The Principle of Specificity: Measure and Work Each Joint Separately

You may be flexible in one joint or area of the body and inflexible or tight in another part of the body. Work particularly hard on stretching areas of your body that have poor flexibility. Of course, you should work to improve the flexibility of all your muscles and joints.

Each person has a different degree of flexibility. You should not compare your own flexibility with the flexibility of others. Instead, keep track of how well your flexibility increases in each area of your body.

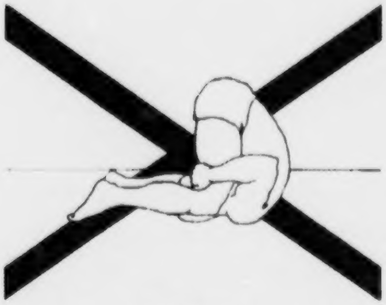
Guidelines for Safe Stretching: Be Patient and Treat Your Body Well

Anyone can begin a flexibility program. But if you over-stretch or go beyond your body's limits, you will end up injuring your muscles and joints. Take satisfaction in your long-term commitment to fitness and don't try to remake your body in a day. Follow the guidelines for safe stretching below.

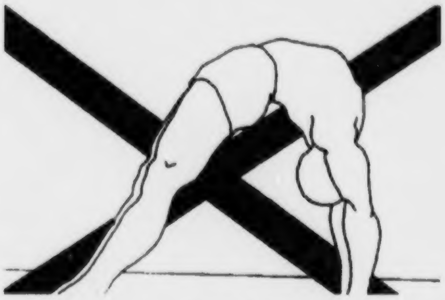
- Always begin an exercise session with a **warm-up**. It is important to warm up the body before stretching. Increasing the body's temperature helps to increase circulation needed for the muscles and joints to work properly. A typical warm-up might include some easy jogging or brisk walking before running.

- Perform gentle stretches before workout.
- Stretch longer and deeper into stretches during the *cool-down*, or the end of your workout.
- Perform static stretches only. Move slowly and smoothly into each stretch, holding each position for 20 seconds.
- Perform each stretch one to three times each.
- Release each stretch as carefully as you moved into it.
- Stretch to a point of tension, not pain.
- Stretch within your own limits. Listen to your body—its limits may be different each day.
- Avoid fast stretching and bouncing while stretching.
- Avoid locking your knees or other joints when stretching.
- Relax into the stretch and focus on the muscle being lengthened.
- Breathe naturally throughout all movements. Exhale when moving deeper into a stretch.
- Use proper form and body alignment on all stretches.
- Vary your stretching routine by learning new ways to stretch muscles.
- Focus on the tight muscles in your body, but include stretches for the entire body.
- Stretch daily. Frequency and consistency are the keys to improving flexibility.

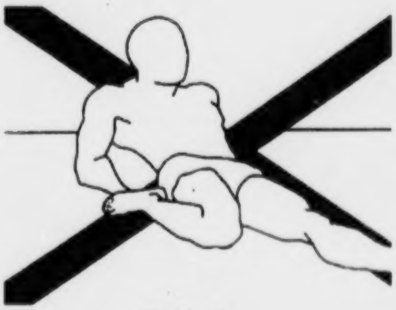
- Avoid harmful stretching positions. The plow, hurdle stretch, bridge, and standing toe touch are just a few of the more common positions that can create stress on the back or knee joint.



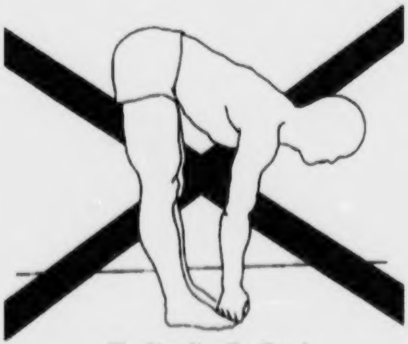
The Plow



The Bridge



The Hurdle



The Standing Toe Touch

Measuring Flexibility: How Well Can You Stretch?

Before starting an exercise program, you should measure your flexibility. You will then be able to measure your progress and see the increase in your flexibility over time.

There is no single test that can measure your overall flexibility. Each joint is specific and must be measured individually. However, measuring areas of the body such as the shoulder, hip, and lower back will give you an indication of the flexibility you have in your major joints.

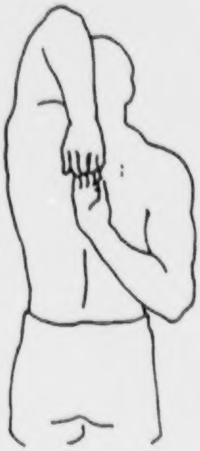
Flexibility

To evaluate your level of flexibility, you will need a partner for the following tests.

1. Shoulder Flexibility

Purpose: To measure shoulder joint flexibility.

Procedure: Raise your left arm. Reach down your back as far as possible. At the same time, place your right arm behind your back and attempt to reach up to the fingers of your left hand. This measures the flexibility of your right shoulder. Reverse the arm positions to measure the flexibility of your left shoulder. Record the results below.



Evaluation of shoulder flexibility:

Test	Flexibility		
	GOOD	FAIR	POOR
Left shoulder flexibility			
Right shoulder flexibility			

Good—Fingers can touch

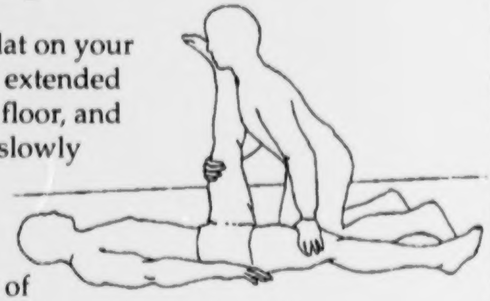
Fair—Fingertips are not touching but less than 2" apart

Poor—Fingertips are more than 2" apart

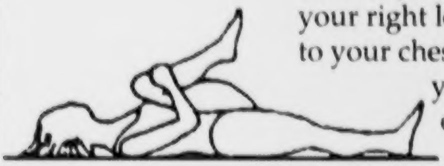
2. Hip Flexion

Purpose: To evaluate the amount of **flexion** in the hip flexors and hamstrings.

Procedure: Hamstrings—Lie flat on your back. Keep one leg extended straight out on the floor, and have your partner slowly lift your other leg straight up until you feel a slight tension in the back of the thigh. Do not force the leg up. Normal hamstring length will allow the leg to reach an angle of 80 to 85 degrees.



Procedure: Hip Flexors—Lie flat on your back, and extend both of your legs straight out on the floor. Keep your right leg in place, and pull your left knee to your chest, holding it firmly with both of your hands. Normal hip flexion is displayed if your right leg stays flat.



Evaluation of hip flexion:

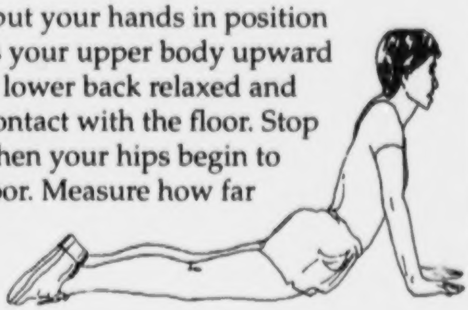
Test	Flexibility	
	GOOD	POOR
Hamstring flexibility **Good**—Leg reaches an angle of at least 80 degrees **Poor**—Leg reaches an angle of less than 80 degrees		
Hip flexion **Good**—Right leg stays flat on the floor **Poor**—Unable to keep right leg in contact with the floor		

Flexibility

3. Back Extension

Purpose: To measure the amount of backward bend you have in your back.

Procedure: Lie face down and put your hands in position for a push-up. Press your upper body upward while keeping your lower back relaxed and your hip bones in contact with the floor. Stop pressing upward when your hips begin to lose contact with floor. Measure how far your hips come up from the floor.



Evaluation of back extension:

Test	Flexibility		
	GOOD	FAIR	POOR
Back extension			

Good—Hips remain in contact with the floor while arms are fully extended

Fair—Hips come up from floor up to 2"

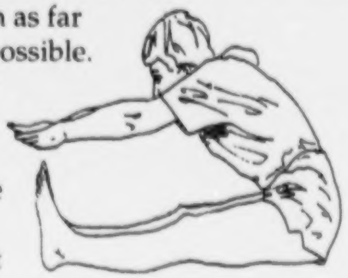
Poor—Hips come up from floor 2" or more

4. Trunk Flexion (Sit and Reach Test)

Purpose: To determine the level of flexibility you have in your lower back and hamstrings.

Materials: yardstick, tape

Procedure: Place a yardstick on floor, taping it down with a long piece of tape at the 15-inch mark. Sit on the floor with your shoes off and your legs extended straight out in front. Straddle the yardstick between your legs with the zero mark towards your body and the 15-inch mark towards your heels. Place one hand over the other and slowly stretch as far forward past your toes as possible. Hold the position for a few seconds with your legs straight and without bouncing. Repeat two more times and record your farthest reach to the nearest inch.



Evaluation of trunk flexion:

Test	Flexibility				
	Excellent	Good	Fair	Poor	Very Poor
Trunk flexibility					

Best score for the Sit and Reach Test: ___________

Males	Females	Rating
>20	>24	Excellent
18-20	21-24	Good
15-17	18-20	Fair
10-14	14-17	Poor
<10	<13	Very Poor

Flexibility

My flexibility results:

Date	Flexibility Test	Rating			Improvement Goals
		GOOD	FAIR	POOR	
	Shoulder flexibility				
	Hip flexion: a) hamstrings b) hip flexors				
	Back extension				
	Trunk flexion (Sit & Reach Test)				

Health Problems from Lack of Flexibility

Lack of flexibility can do more than keep you from doing splits. Poor flexibility can cause pain, bad posture, and damage to the joints. Poor flexibility of the…

…***shoulder*** can cause neck, shoulder, and back aches or pain, bad posture.

…***hip*** can cause hip and low back pain, bad posture.

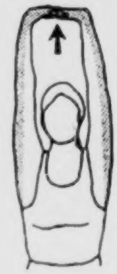
…***back*** can cause lower back pain, bad posture.

…***trunk*** can cause lower back and knee problems.

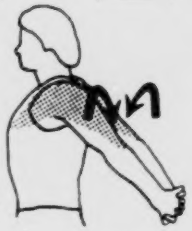
General Stretching Program

The Stretches

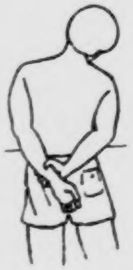
Follow closely the instructions for each stretch. Remember not to compare your level of flexibility with your classmates'. Doing so will only cause you to stretch farther than you should and may cause you to overstretch your muscles. Extend your muscles only to their stretching point—or the point at which you feel a *slight* discomfort.



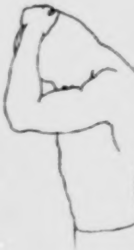
Overhead Shoulder Stretch. Clasp your hands together and reach above your head as high as possible. Hold for 20 seconds. Release and repeat two more times.



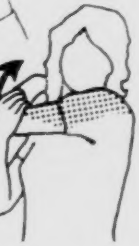
Chest and Shoulder Pull. Clasp your hands together behind your back and slowly lift your arms upward. Keep your body upright and your knees slightly bent. Hold for 20 seconds. Release and repeat two more times.



Side Neck Stretch. With your hands behind your back, pull your left arm to your right side while tilting your head to the right until you feel tension in the left side of your neck. Hold for 20 seconds. Reverse to other side.

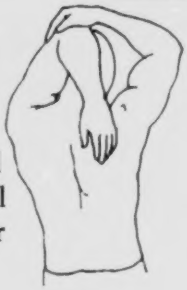


Posterior Neck Stretch. Bow your head forward. Interlock your hands on the back of your head. Pull your head down with your chin resting on your chest. Hold for 20 seconds. Release and repeat two more times.



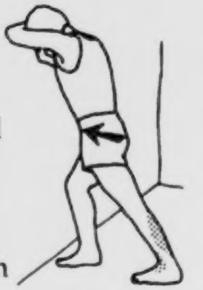
Deltoid Stretch (shoulder). Bring your right arm straight across to the left side of your body. Grasp your right elbow with your left hand at chest level, and pull your elbow and arm back until you feel a slight stretch in your right shoulder. Hold for 20 seconds. Repeat on the other side.

Flexibility

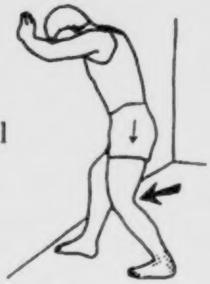


Triceps Stretch (back of upper arm). Raise both of your arms above your head. Drop your left hand behind your head, keeping your palm flat on your back. With your right hand, grab your left elbow and press it towards the center of your back until you feel a slight tension on the back of your left arm. Hold for 20 seconds. Repeat on the other arm.

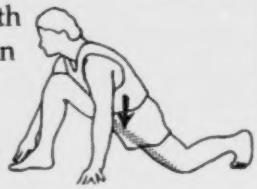
Calf Stretch (two parts):



a) Stand facing a wall. Place both of your hands on wall. Bring your right foot to the base of the wall and step back with your left leg. Keep your left leg straight and your left foot pointing directly forward with your left heel on the floor. Press your hips forward toward the wall until you feel a slight stretch in the back of your lower left leg behind the knee. Hold for 20 seconds.

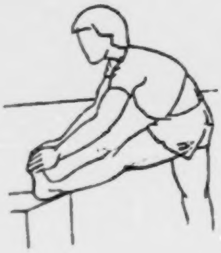


b) Next, slowly bend your left knee and slide your hips back as if preparing to sit down. You should feel the tension shift to an area just above your left heel. Hold for 20 seconds. Switch legs and repeat both parts of the calf stretch.



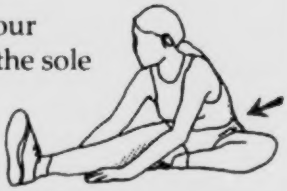
Runners Stretch (hip flexors). Lunge forward with your right leg. Place your hands on the floor, one on each side of your right leg. Keep your right knee directly over the ankle. You should feel a slight tension in the front of your upper left leg. Hold for 20 seconds. Repeat on the other leg.

Hamstring Stretch (back of upper leg):



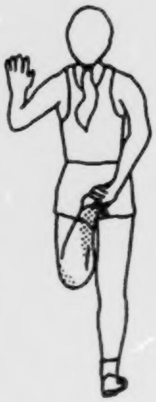
a) Standing Hamstring. Place your left leg on a chair with your toes pointing straight up. Bend forward at the hips, keeping your back straight. Lead with your chest as you fold down towards your thigh. Lean until you feel a slight tension on the under-side of your upper left leg. Hold for 20 seconds. Release slowly. Repeat on the other leg.

b) Seated Hamstring. Sit on the floor with your right leg extended and your left leg bent with the sole of your left foot touching the inside of your right knee. Place your hands on the floor on each side of your right leg. Keeping your back straight, slowly bend forward from your hips, bringing your chest towards your right knee. Hold for 20 seconds. Release slowly. Repeat on the other leg.

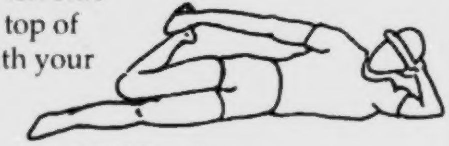


Quad Stretches (front of upper leg):

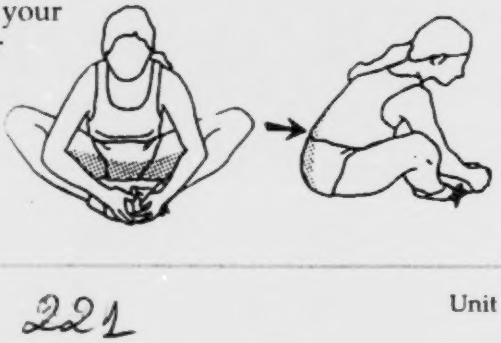
a) Standing Quad. Stand near a wall and place your left hand at shoulder level on the wall. Grasp your left foot with your right hand. Keeping knee, hip, and ankle in alignment, pull your left heel towards your buttocks until you feel a slight tension in the front of your left thigh. Hold for 20 seconds. Repeat on the other leg.



b) Side-Lying Quad. Lie on your left side with legs extended and stacked on top of one another. Support your head with your left hand. Reach with your right hand and grab your right foot, pulling the heel towards your buttocks. Hold for 20 seconds. Repeat on the other leg.

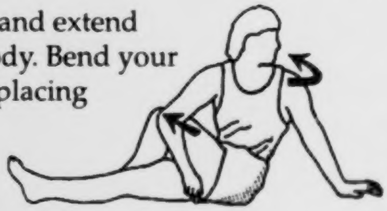


Groin Stretch (inner thigh). Sit on the floor with both of your legs bent at the knee and the soles of your feet touching together. Grab your feet with your hands, and pull your feet as close as possible to your body. Slowly lean forward, keeping your back straight and bending from the hips. Bend forward until you feel a



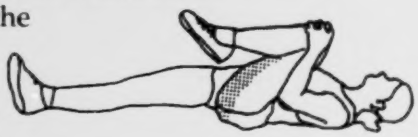
slight tension in the inner-thigh area. Hold the position for 20 seconds without pressing or bouncing into the stretch. Release slowly. Repeat.

Seated Spine Stretch. Sit on the floor and extend both of your legs out in front of your body. Bend your left leg and cross it over your right leg, placing your left foot on the floor on the outside of your right knee. Turn your upper body to the left using your right elbow to press against the outside of your left thigh. Press against the thigh until you feel a slight tension. Hold for 20 seconds. Reverse your legs and repeat.

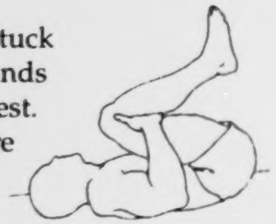


Lying Tuck Knee Stretches (lower back relaxer):

a) Single-Knee Tuck. Lie on your back with both of your legs extended straight out on the floor. Pull your left knee to your chest, holding your leg just below the knee with both hands. Hold for 20 seconds. Repeat using the other leg.

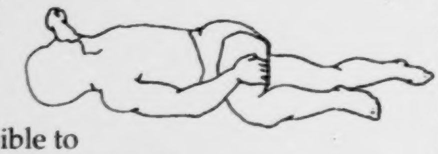


b) Double-Knee Tuck. Lie on your back and tuck both of your knees to your chest. Place your hands behind your knees, and hug them into your chest. Hold for 20 seconds. Relax and repeat two more times.

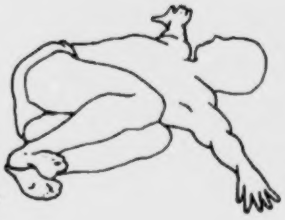


Lying Spine Stretches (lower back stretch):

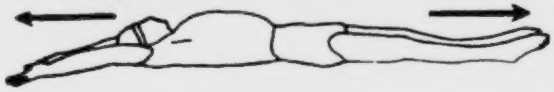
a) Single Knee. Lie on your back with your arms extended straight out to your sides and your legs extended out on the floor. Tuck your left knee into your chest and bring it over to the right side of your body. Grab your left upper leg with your right hand and bring it as far as possible to your right side. Relax, and repeat on the other side.



b) Double Knee. Lie on your back with your knees tucked to your chest, and your arms extended straight out to your sides. Slowly roll your lower body to your left side, keeping your arms flat on the floor. Relax into the stretch. Slowly roll body to right side.



c) Lying Total Stretch (whole body stretch). Lie on your back. Extend your arms straight above your head and extend your legs on the floor with your toes pointed. Reach and stretch your arms as far as possible above your head, and stretch your toes and feet as far as possible away from your body. Relax and repeat two more times.



Fitness Career Opportunity!

Certified Athletic Trainers & Physical Therapists

Certified athletic trainers teach people how to do the right exercises and techniques during physical fitness training. The right exercises and techniques help people avoid injury and get the most of their workouts. Certified athletic trainers also help injured people recover. Many athletic teams and sports medicine clinics use certified athletic trainers to develop exercise programs. Many athletic trainers are also physical therapists.

Physical therapists help injured people recover and disabled people overcome their physical limitations. Sports physical therapists usually work at sports-medicine clinics. Physical therapy is one of the fastest-growing health-care professions.

For more information on athletic trainers and physical therapists, contact:

National Athletic Trainer's Association
2952 Stemmons Street
Dallas, Texas 75247
1-800-879-6282

American Physical Therapy Association
1111 Fairfax Street
Alexandria, Virginia 22314
1-800-999-2782

Flexibility

Summary

Flexibility is the ability to move muscles and joints through a full *range of motion* without causing pain or injury. Flexibility is important for good health and contributes to overall physical fitness. Proper and regular *stretching* can reduce injuries, lessen the chance of back pain, decrease *muscle* soreness, and help in daily physical activities. Stretching also helps relieve stress and enhances relaxation.

Static, dynamic, passive, and *ballistic* are all methods of stretching. Static stretching, or moving to a point of tension and holding that position, is the safest way to improve flexibility. Ballistic stretching involves bouncing while stretching. It is considered high risk for injury and is not recommended.

To continually improve your flexibility you must apply the F.I.T. training principles: increase the (F) frequency, the (I) intensity, and the (T) time you spend stretching.

Following some basic guidelines will help you improve your flexibility. Perform all stretches one to three times each, holding each stretch for 20 seconds. Push only to the *stretching point*, or the point of slight discomfort. Do not stretch your muscles to the point of pain or you may overstretch your muscles. Try to stretch every day. Relax and enjoy the good feeling stretching creates!

Multiple Choice

Circle the letter of each correct answer.

1. The ability to move muscles and joints through a full range of motion without injury or pain is called ___________ .

   a. stretching
   b. meditation
   c. flexibility
   d. overload

2. ___________ is the safest method of improving flexibility.

   a. Passive stretching
   b. Dynamic stretching
   c. Ballistic stretching
   d. Static stretching

3. The benefits of stretching and a flexibility program do *not* include ___________ .

   a. reduced injuries
   b. relaxation
   c. reduced risk of back pain
   d. increased muscle soreness

4. Ballistic stretching is a type of stretching that ___________ .

   a. uses a partner for assistance
   b. involves bobbing and bouncing while stretching
   c. involves slow and controlled movements
   d. involves holding a stretch to the stretching point

5. Safe stretching does *not* include ___________ .

   a. holding each stretch for 20 seconds
   b. moving rapidly into the stretched position
   c. a warm-up before stretching
   d. performing each stretch one to three times

Flexibility

6. A lack of flexibility could cause __________ .

   a. lower back pain
   b. muscle tension and stiffness
   c. athletic injuries
   d. all of the above

7. Tissue that connects muscle to bone is called __________.

   a. tendons
   b. arteries
   c. muscle fibers
   d. ligaments

8. A type of stretching in which you rely on a partner for assistance is referred to as __________.

   a. passive stretching
   b. dynamic stretching
   c. static stretching
   d. ballistic stretching

9. The place where two or more bones connect is called a __________ .

   a. muscle
   b. joint
   c. tendon
   d. ligament

10. Joints are moved by the lengthening and shortening of surrounding __________ .

    a. muscle
    b. ligament
    c. tendon
    d. bone

11. To increase flexibility, the muscle must be overloaded by ___________ .

    a. bouncing beyond the stretching point
    b. forcing the stretch to pain
    c. slowly stretching further than normal
    d. holding the stretch for five minutes

12. Regular stretching exercises will help to ___________ .

    a. make daily activities easier
    b. improve performance in physical activities
    c. minimize muscle soreness
    d. all of the above

13. Stretching that involves slow, controlled movements past the stretching point is called ___________ .

    a. passive stretching
    b. ballistic stretching
    c. static stretching
    d. dynamic stretching

14. Always begin an exercise session with a warm-up and end it with a(n) ___________ .

    a. ballisitic stretch
    b. heavy meal
    c. additional warm-up
    d. cool-down

15. The tissue that connects bone to bone is called ___________ .

    a. tendons
    b. ligaments
    c. muscles
    d. joints

Flexibility

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

________ 1. Developing good flexibility can help prevent injury.

________ 2. Back problems are often the result of poor flexibility in the lower back, hips, and legs.

________ 3. The hurdle stretch is a safe and effective way to stretch the hamstrings, or back of the upper leg muscles.

________ 4. Competing with other students when stretching is a safe method for improving flexibility.

________ 5. The best way to increase flexibility is to use the body's momentum to force the muscle beyond its stretching point.

________ 6. Muscle soreness can be minimized and reduced with gentle stretching.

________ 7. Flexibility is limited by the bony structure as well as the muscles, ligaments, and tendons around the joint.

________ 8. Physically active individuals are generally more flexible than those people who do not exercise.

________ 9. Stretching exercises should be performed before the body is warmed up.

________ 10. The training principle of specificity states that flexibility can only be gained in those muscle or joints that are stretched.

________ 11. Ballistic stretching is a risky method of stretching that can overstretch muscles.

________ 12. The amount of movement a joint will allow without causing stress on that joint is called *range of motion.*

________ 13. Females are not usually more flexible than males.

________ 14. The sit and reach test is a way of evaluating overall flexibility of the body.

________ 15. Ideally, stretching should be performed everyday.

Flexibility

Identification

Write the correct vocabulary term on each line below.

______________________ 1. a training principle that says you must gradually increase the amount of exercise performed by the body to increase fitness

______________________ 2. a training principle that says you must work the body beyond its normal level to increase fitness

______________________ 3. a training principle that says you must work on the specific part of the body you want to improve

______________________ 4. a type of muscle lengthening in which you rely on a partner for assistance in the stretch

______________________ 5. a type of muscle lengthening that involves slow, controlled movements past a muscle's stretching point

______________________ 6. a type of muscle lengthening that uses the body's weight to bob or bounce past a muscle's stretching point

______________________ 7. exercising to lengthen your muscles and improve flexibility

______________________ 8. groups of tissue that surround bones and produce physical movements

_______________ 9. the ability to move muscles and joints through a full range of motion without pain or injury

_______________ 10. exercises that increase the body's temperature and prepare it for more vigorous activity

_______________ 11. the place where two or more bones connect

_______________ 12. strong tissues that attach one bone to another bone

_______________ 13. the point at which your muscle is being stretched and at which you begin to feel a slight discomfort

_______________ 14. a type of muscle lengthening that involves slowly moving to a point of muscle tension and then holding that position

_______________ 15. the distance a joint can move without pain or injury

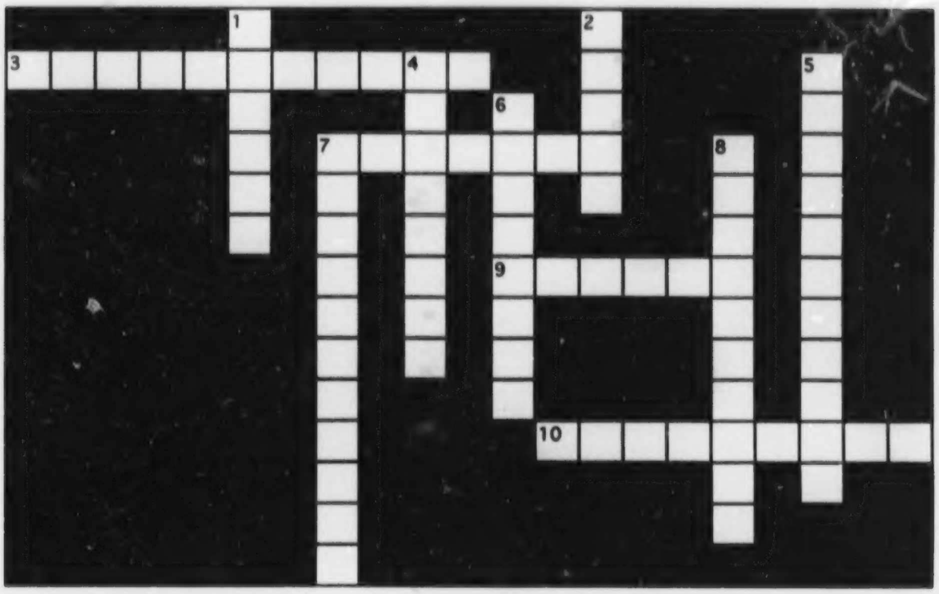
_______________ 16. the bending movement around a joint

_______________ 17. strong tissues that attach muscle to bone

Flexibility

Solve

Use the following clues to solve the crossword puzzle below.



Across

3. a training principle that says you must gradually increase the amount of exercise performed by the body to increase fitness
7. the bending movement around a joint
9. groups of tissue that surround bones and produce physical movements
10. _______ stretching uses bobbing or bouncing to force a muscle past its stretching point

Down

1. strong tissues that attach muscle to bone
2. the place where two or more bones connect
4. a training principle that says you must work the body beyond its normal level to increase fitness
5. a training principle that says you must work on the specific part of the body you want to improve
6. strong tissues that attach one bone to another
7. the ability to move joints and muscles through a full range of motion without pain or injury
8. exercising to lengthen your muscles and improve flexibility

4

Muscular Fitness

What's Inside?

The Front and Back Musclar System

Muscular Fitness

Vocabulary

Study the vocabulary words and definitions below.

calisthenics	exercises that use the weight of one's body as resistance
fast-twitch muscle fiber	strands in the muscle that contract quickly and are useful for short, intense bursts of action
fatigue	tiredness or exhaustion; to tire out
free weights	objects of various weights used for developing or increasing muscular fitness *Examples*: barbells and dumbbells
isokinetic	exercises done on specially designed exercise machines that work the muscle with maximum resistance throughout the muscle's entire range of motion
isometric	exercises that work a muscle against an immovable object
isotonic	exercises that cause a muscle to lengthen and shorten through a full range of motion while lifting and lowering a weight or resistance

Muscular Fitness

muscular endurance	the ability of a muscle or group of muscles to repeat a movement over a period of time without tiring
muscle fiber	the basic unit of the muscular system; a strand of fiber
muscular fitness	includes two health-related components of physical fitness: muscular strength and muscular endurance
muscular strength	the ability of a muscle or groups of muscles to exert maximal force in a single effort
muscle tone	firm and defined muscles resulting from muscular strength and endurance exercises
power	the ability to use maximum strength in a fast movement
repetitions	the number of times a complete exercise is performed; also called *reps*
resistance training	exercises in which a muscle or group of muscles repeatedly push or pull against an opposing force; also called *weight training*

Muscular Fitness

set	a group of repetitions performed without resting
skeletal muscles	muscles that attach to the skeletal bones by tendons
slow-twitch muscle fiber	strands in the muscle that contract slowly and have the ability to work for long periods of time
weight training	exercises performed against resistance to develop and improve muscular strength and endurance; also called *resistance training*

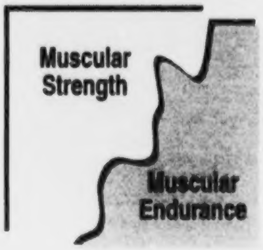
Muscular Fitness

Introduction

Have you ever looked with envy at someone on the beach whose body was muscular and well-defined? These fit muscles not only looked good, but they were healthy, too! **Muscular fitness** not only improves your appearance but helps keep you lean, strengthens your bones, decreases your risk of injury, gives you more energy, and improves your control over your body. **Resistance training**, or **weight training**, is the best method to improve the tone, shape, and strength of your muscles and body.

Muscular fitness: Strong Muscles That Can Keep Working

Muscular fitness includes two health-related components of physical fitness: **muscular strength** and **muscular endurance**. Muscular *strength* is the ability of a muscle or group of muscles to exert a maximal force in a single effort. Lift a heavy weight one time and you are using muscular strength. Muscular *endurance* is the ability of a muscle or group of muscles to repeat a movement over time without tiring. Carry a medium load for a long time and you are using muscular endurance.


Muscular Fitness

Every movement we make uses our muscular system. Well-conditioned muscles are essential for efficiently carrying out your daily activities. Without muscular strength and endurance, even carrying a load of library books home or unloading a trunk full of groceries can be exhausting.

Fit Muscles: The Benefits of Muscular Strength and Endurance

Muscular strength and endurance are important components of overall health. Muscular strength and endurance not only improve your physical health, but they can also improve your psychological health. When you work on your body, you work on your mind! Muscular fitness will

- increase muscle tissue, creating more strength

- tone and firm muscles, improving physical appearance
- burn a higher rate of calories than unfit muscles, even when the body is not exercising
- help decrease fat and improve body composition
- help in correcting muscular strength imbalances
- improve posture
- improve physical ability and athletic performance
- help improve coordination, giving you a better sense of control over your body
- help build self-confidence
- reduce risk of injuries by protecting joints
- help prevent and reduce lower back pain
- help in strengthening bones
- reduce risk of heart disease, diabetes, and some forms of cancer
- slow the aging process
- help women build muscular strength and **muscle tone** without gaining bulky muscles.

Unfit Muscles: The Body at Risk

A lack of inadequate muscular strength and endurance can lead to many health-related problems. A lack of muscular fitness can cause

- poor muscle tone and body composition
- body to gain weight easily
- poor posture due to weakened muscles
- bone loss

- muscle and joint injuries
- lower back and other joint pain
- diabetes, heart disease, and certain cancers
- reduced control over body
- low energy level and quicker **fatigue** rate.

Muscle Structure: Fast- and Slow-Twitch Muscle Fibers

Movement by the body is produced by **skeletal muscles**. *Skeletal muscles* are attached to the bones by tendons. When we strengthen and exercise the skeletal muscles, we improve muscular fitness.

Skeletal muscles are composed of two types of **muscle fibers**: **fast-twitch muscle fibers** and **slow-twitch muscle fibers**.

Fast-twitch muscle fibers contract, or tighten, quickly and are useful for short, intense bursts of action. However, fast-twitch muscle fibers tire quickly, so they can only be used efficiently for a brief time. A sprinter needing to explode off the starting line and dash for 50 meters would need muscles with a large number of fast-twitch fibers. To generate an explosive strength movement requires **power**. Power is the use of maximum strength at a rapid rate. Only a large number fast-twitch fibers can produce power. Someone trying to build muscular strength needs to train and increase the number of fast-twitch muscle fibers.

Slow-twitch muscle fibers contract slowly and have the ability to work for long periods of time without tiring. These fibers are best suited for aerobic or endurance activities. A long-distance runner requires a large number of slow-twitch fibers. A person trying to increase muscular endurance needs to train and increase the number of slow-twitch fibers.

Everyone is born with a different number of slow-twitch and fast-twitch muscle fibers. An individual born with many fast-twitch muscle fibers will have an advantage in a speed or power sport or activity. And a person born with many slow-twitch muscle fibers will have an advantage in an aerobic or endurance sport or activity. However, everyone can improve the fitness, number, and performance of each kind of muscle fiber through proper exercise training.

Developing Muscular Fitness: Isometric, Isotonic, and Isokinetic Exercise

To train each kind of muscle fiber and the overall fitness of muscles, there are three different methods of exercising: **isometric**, **isotonic**, and **isokinetic**. Each of these methods works the muscle against resistance to improve fitness.

Isometric: Pressing against an Immovable Object

Isometrics are exercises in which the muscle contracts when pressed against an immovable object. For example, squeezing a tennis ball in your hand as hard as you can for six to ten seconds is an isometric contraction.

Isometric exercises develop strength only at the position the exercise is performed,

Guidelines for Muscular Fitness Exercises	
1. Begin with a warm- up.	A warm-up consists of exercises that warm up the body's temperature and prepare it for more vigorous activity. A proper warm-up will make you less prone to a muscle or joint injury. A typical warm-up might include light jogging to heat up the body, then some gentle stretching to lengthen the muscles.
2. Use proper gear.	Wear rubber-soled shoes or other non-skid shoes when working out. Wearing gloves can be helpful in protecting your hands and preventing the weights from slipping. Always secure barbell plates properly to prevent slipping. Learn proper ways of handling free weights and weight machines.
3. Use proper form.	To get better results out of the exercises and reduce chance of injury, learn and use proper exercise technique and posture on all exercises. Never sacrifice form in an attempt to perform more reps or use more weight. Avoid locking joints when performing any exercise.
4. Avoid horse play.	Working with weights is not a time to play around. Do not attempt to lift weights that are too heavy or perform exercises that are too advanced for your fitness level.
5. Begin slowly.	If you are new to any type of muscular fitness program, begin with very light weights. This will allow your body a chance to learn and perform the exercises correctly.
6. Use a spotter.	Do not lift free weights without a partner. A spotter is essential for safety and can aid you in making improvements. Be sure to tell your spotter how many reps you intend to complete and tell the spotter when you need assistance.
7. Exercise major muscle groups.	For total muscle conditioning and balanced fitness, it is essential to exercise the whole body. Avoid exercising only the parts you enjoy the most.
8. Exercise large muscles first.	Since the large muscles require the most energy, workout sessions should be organized with the largest muscle groups first, followed by the smaller goups.
9. Work your full range of motion.	Choose a weight that allows you to perform the exercise through a full range of motion. Range of motion is the distance a joint can move without pain or injury. Working the full range of motion helps to target weak and injury prone areas and avoid tightening of the muscle.
10. Use controlled movements.	Exercise movements should be slow and controlled. When training with weights, take 2 counts to lift the weight, and 4 counts to lower the weight. Swinging or bouncing the weights in attempt to lift them places stress on the joints and muscles. This increases the risk of an injury.
11. Remember to breathe.	Try to avoid holding your breath during any exercise. Holding your breath could cause you to get dizzy. Try to exhale when you are applying the greatest force to the movement, and inhale during the easy part.
12. Rest.	A brief pause of 1 to 2 minutes between sets allows the muscles to recover a bit before beginning the next set. This is a good time to stretch the muscle that has just been worked. Also, workouts with weights that focus on strength should be scheduled every other day. This helps to allow for adequate rebuilding of muscles.
13. End with a cool-down.	Always take adequate time to cool down after working out. This cool-down may include stretching all the major muscle groups, plus any others used in the activities.
14. Train, don't strain.	It is normal to expect some muscle soreness from muscle strength or endurance training. But, it is not necessary to push to pain to improve. A gradual level of progression as your body adapts to exercise is much safer. Always let your muscles adjust to the new weight or exercise before moving on.

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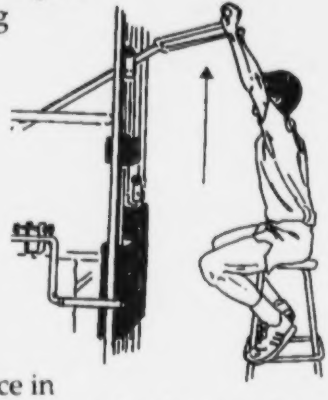
not throughout the full range of motion. Isometric exercises are not effective in developing overall strength.

The advantage of isometric exercises is that they take very little space and equipment to perform, and can be done while sitting at a desk or driving in a car. However, they can cause an increase in blood pressure and may not be recommended for persons with circulatory problems.

Isotonic: Calisthenics, Free Weights, and Weight Machines

Isotonics are exercises that cause a muscle to lengthen and shorten through a full range of motion while lifting and lowering a weight or resistance. This resistance may be in the form of weight training equipment such as **free weights** or weight training machines. Free weights are objects of various weight used for developing and increasing muscular strength and endurance. Free weights consist of weighted bars, called *barbells* and *dumbbells*, or *handheld weights*.



Isotonics also include **calisthenics**, or exercises that use the weight of your own body for resistance. Push-ups or abdominal curl-ups are examples of calisthenics.

Each isotonic exercise demands more muscle force in some positions and less muscle force in others. For example, the muscle effort used to lift a barbell is greater when the arm is perpendicular to the ground than when the arm is parallel to the ground. The change in muscle effort throughout the exercise movement is the only disadvantage to isotonic exercises. Isotonic exercises are the most common and popular form of developing muscular fitness.

Isokinetic: Specially Designed Weight Machines

Isokinetic exercises are done on specially designed weight machines that work the muscle through the entire range of motion using variable resistance and speed. By altering the resistance and speed, these machines are able to keep the resistance you are working against at a constant level. The advantage of this method is that maximum resistance is provided at strong points and less resistance is provided at the weak points of the movement.

Isokinetic equipment is becoming more commonly seen in gyms or health clubs. Isokinetics are a superior way of increasing muscular strength and endurance.

Training Principles for Muscular Fitness: Overload; Progression; and Specificity

Overload: Using the F.I.T. Formula

In order to improve your muscular fitness, you must consistently *overload*, or work your muscles harder than normal. After your muscles have been overloaded, they must be rested. It is during these rest periods that your muscles build and muscular development takes place. You can achieve overload to increase muscular strength and endurance by applying the *F.I.T. formula*.

(F) Frequency

- Perform muscular fitness exercises three or four times a week.
- Space workouts 48 hours apart to allow the muscles to recover and rebuild if training for muscular strength.
- Increase the length of your exercise sessions to increase muscular fitness.

(I) Intensity

- Use light resistance if you desire muscle tone and general strength.
- Reach fatigue between twelve and fifteen **repetitions** during light resistance. *Repetitions* are the number of complete times an exercise is performed.
- Use greater resistance and perform fewer repetitions if your goal is muscular growth and increased strength.
- Reach fatigue between six and ten repetitions during heavy resistance.

Muscular Fitness

(T) Time

- Perform one to three **sets** of each exercise for a general fitness program. A *set* is a group of repetitions performed without resting.
- Include at least eight to ten exercises for the entire body.
- Take a one- to two-minute rest between sets or exercises.
- Try reducing the rest time between sets to increase muscular fitness as your body gets used to a certain workout. Your workout may take from 20 minutes to an hour or more, depending upon your goals.

Even though muscular strength and muscular endurance are separate components of health-related fitness, they are closely related to one another. The primary difference between the two is in the amount of weight lifted and the number of times the movement is performed.

Muscular STRENGTH ⟶ High Weight/Low Reps
Muscular ENDURANCE ⟶ Low Weight/High Reps

Progression: Increasing Muscular Fitness

If you are just beginning a muscular fitness program, experts recommend that you first develop muscular endurance before muscular strength. To build muscular endurance, train with lighter weights and perform a higher number of repetitions. This will lessen the chance of an injury, reduce muscle soreness, and allow your body adequate time to learn proper exercise technique.

To progress in a muscular fitness program, you must increase the resistance and/or the number of repetitions. Once you are able to lift a pre-established number of repetitions, add a small increase in weight. When you increase the weight you are lifting, you should decrease the number of repetitions. Then, as your muscles develop, increase the number of repetitions you do with the heavier weight.

Specificity: Targeting Specific Parts of the Body

Although doing any resistance exercises with proper technique will benefit your muscular fitness, you should design a training program with specific goals in mind. To develop muscular strength or endurance in a particular part of your body, you must work those particular muscles. For example, to increase leg strength, you need to do specific leg exercises. To firm and tighten the stomach area, you must do abdominal strengthening exercises.

Common Fallacies Associated with Weight Training

Fallacy: Weight training is only for athletes.

Fact: Resistance training has important health value for everyone! People in all walks of life can benefit from increasing their muscular strength and endurance. Stronger muscles prevent lower back and joint pain, reduce the risk of many chronic diseases, delay the aging process, and can improve your physical ability and appearance.

Fallacy: Steroids are a safe way of developing muscle mass.

Fact: Steroids are not only illegal, but have many dangerous side effects. The health risks are not worth the muscle mass that can be developed using steroids. The safest way to develop stronger, larger muscles is to follow a regular, strength training program.

Fallacy: As a female, I worry I will develop big, bulky muscles if I lift weights.

Fact: Certain hormones are necessary for big muscles and females generally don't have them in sufficient quantity. Females improve in muscle tone when they weight train without as much gain in muscle size as males.

Fallacy: Muscle soreness is an indication I have worked out too hard or perhaps injured myself.

Fact: Muscle soreness is a normal response to a new physical activity or an increased workload. It is experienced by nearly everyone who trains for muscular fitness. It is more common to experience a deeper soreness when your body is new to an exercise or workload. Once your body has adapted to exercise, severe muscle soreness should not occur. However, if you are goal-oriented and push yourself very hard every workout, expect muscle soreness. No matter what fitness condition you are in, when you perform a new activity you can expect some muscle soreness. Gentle stretching before and after training, as well as light exercises, are ideal for speeding the recovery from muscle soreness.

Fallacy: Once I develop the strength I desire, I can stop lifting weights.

Fact: The adage *use it or lose it* applies to every component of physical fitness. The body maintains or improves with use and deteriorates with disuse. You must follow a regular exercise program to maintain your fitness level.

Find Your Starting Point: Measuring Muscular Strength and Endurance

Before starting a muscular fitness program you should measure your muscular strength and endurance. You will then be able to measure your progress over time.

Muscular strength and endurance can be measured in many ways. One simple method is to determine if a person can push, pull, and carry her own body weight effectively.

To complete the following muscular fitness evaluations, find a partner. Before performing any of the tests, warm up your body with some light exercising.

1. Grip-Strength Evaluation

Purpose: To measure the strength of your hand grip. Grip strength is a strong indicator of overall body strength.

Materials: a dynamometer (the instrument used to measure grip strength)

Procedure: Set the dynamometer setting to zero. Squeeze the dynamometer as hard as you can. You are allowed to move the dynamometer as you apply your maximum force. However, do not swing it or allow it to rest against your body. Test both your right and left hand.

The dial on the dynamometer will reflect your score in kilograms. To convert it to pounds, multiply the kilograms by 2.2.

Grip-Strength Ratings		
Males	**Females**	**Fitness Category**
55 & above	35 & above	**Superior**
50 – 54	30 – 34	**Excellent**
44 – 49	26 – 29	**Good**
39 – 43	21 – 25	**Average**
34 – 38	17 – 20	**Fair**
0 – 33	0 – 16	**Poor**

Score for Right-hand Grip Strength: __________

Score for Left-hand Grip Strength: __________

Right-hand Grip-strength Fitness Category: __________

Left-hand Grip-strength Fitness Category: __________

2. Isometric Leg-Squat Evaluation

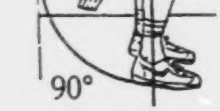
Purpose: To measure the muscular strength and endurance of the large muscles of the legs and buttocks.

Materials: a stopwatch and a wall

Procedure: Stand with your back flat against a wall. Slide down the wall until your knees form a 90-degree angle. Your feet should be flat on the floor and pointing directly forward. Your arms should hang at your sides.

Begin timing as soon as you assume the position described above. The time ends the second you raise or lower from the proper position.

Record your time in minutes and seconds, for example, 1:30, or one minute and thirty seconds.



Isometric Leg-Squat Ratings		
Males	**Females**	**Fitness Category**
3:00 & above	2:00 & above	**Excellent**
1:24 – 2:59	1:02 – 1:59	**Good**
1:23 & below	1:01 & below	**Poor**

Score for the Isometric Leg Squat: ____________

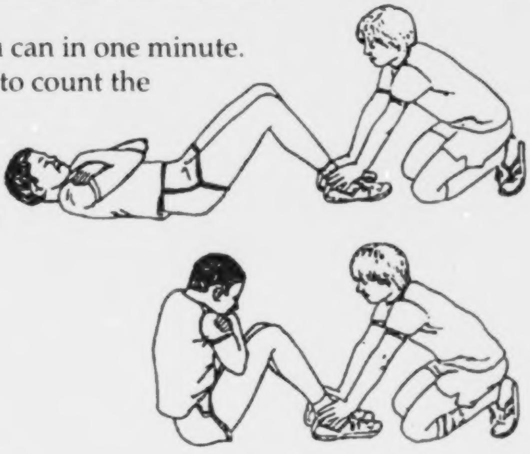
Leg-squat Fitness Category: ____________

3. Curl-Up Evaluation

Purpose:	To measure the level of muscular strength and endurance of the abdominal muscles.
Materials:	a cushioned mat and a stopwatch
Procedure:	Lie on your back with knees flexed, feet flat on floor about 12 inches from buttocks. Cross your arms on your chest with each hand on the opposite shoulder.

Have your partner hold your feet firmly on the floor. When your partner says "begin," *curl* up to a sitting position until your elbows touch your thighs. Return to down position by uncurling until your shoulder blades make contact with the floor. Do not bounce off the floor.

Perform as many curl-ups as you can in one minute. Both you and your partner need to count the curl-ups. Count only curl-ups that you perform properly. Check your count with your partner's count, and record your score.



Curl-Up Ratings

Males	Females	Fitness Category
65 – 70	57 – 65	**Excellent**
49 – 69	42 – 56	**Good**
42 – 48	35 – 41	**Fair**
36 – 41	30 – 34	**Poor**

Number of Curl-ups: ____________________

Curl-up Fitness Category: ____________________

4. Push-Up Evaluation

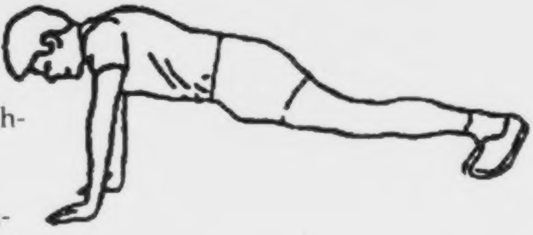
Standard Push-Ups

Purpose: To measure the muscular strength and endurance of the upper body, especially the chest.

Materials: a cushioned mat

Procedure: Lie face down on a mat. Place your hands directly under your shoulders with your fingers pointing forward. Extend your legs straight and tuck your toes to support the weight of your body.

Partner should place a fist beneath mid-chest area. Lower your body by bending your elbows until your chest touches your partner's fist. Then return to the starting position. Keep your body in a straight line from head to toe.



Perform push-ups continuously until you can no longer do anymore. This is not a timed test, but rather a test of how many push-ups you can do without a rest.

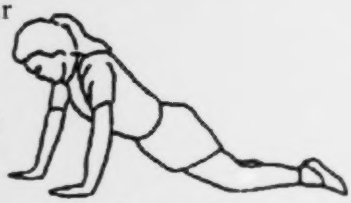
Count the number of correct push-ups performed continuously, and record your score.

Modified Push-Ups

Materials: a cushioned mat and a stopwatch

Procedure: Lie face down on the floor, your elbows bent and hands on the mat with your thumbs next to your chest. Bend your knees and cross your lower legs.

When your partner says "begin," push your body up until your arms are straight and the weight of your body is resting on your hands and knees. Keep your knees, hips, and head in a straight line. Partner should place a fist around mid-chest area. Bend your arms and lower your chest to your partner's fist.



Perform as many correct push-ups as possible in 30 seconds. You may rest if you need to.

Some males and females may not have the strength in their arms and chest to do "standard" push-ups. They should begin by doing as many "modified" push-ups as they can. In time, they will become strong enough to do "standard" push-ups. Both males and females should work towards doing as many "standard" push-ups as they can.

Males should test themselves by doing "standard" push-ups. Females should test themselves by doing "modified" push-ups. Record the number of complete and accurate push-ups you perform.

Push-Up Ratings

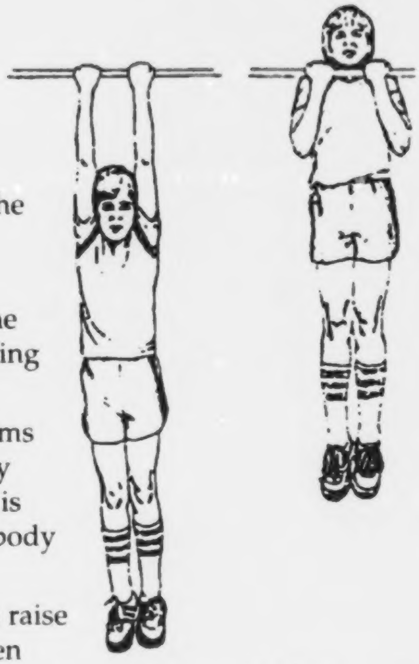
Standard (Males)	Modified (Females)	Fitness Category
55 & above	27 & above	Excellent
45 — 54	19 — 26	Good
35 — 44	12 — 18	Average
20 — 34	5 — 11	Fair
0 — 19	0 — 4	Poor

Number of Push-ups: ____________

Push-up Fitness Category: ____________

Muscular Fitness

5. Pull-Ups Evaluation



Standard (Males Only)

Purpose: To measure the muscular strength and endurance of the arm, shoulder, and back muscles.

Materials: horizontal bar that allows the body to hang without touching the ground

Procedure: Grasp the bar with your palms facing either toward or away from your body. Either grip is acceptable. Do not let your body swing.

Pull your body up until you raise your chin above the bar. Then lower your body until your arms are fully extended. Do not kick your legs or rest.

Perform as many correct pull-ups as you can. Record the number of correct pull-ups completed.

Pull-Up Ratings

Males	Fitness Category
17 & above	Excellent
13 — 16	Good
9 — 12	Average
5 — 8	Fair
0 — 4	Poor

Number of Pull-ups: ____________

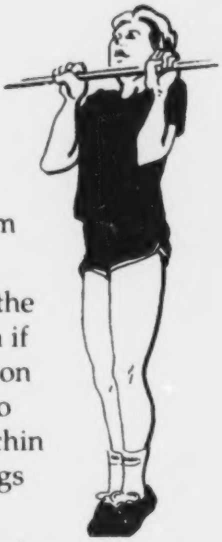
Pull-up Fitness Category: ____________

Flexed-Arm Hang (Females Only)

Materials: horizontal bar that allows the body to hang without touching the ground, and a stopwatch

Procedure: Grasp the bar with your hands shoulder-width apart, your palms facing away from your body (overhand grip).

Pull your body up until your chin clears the bar. (You may be lifted up to this position if you cannot pull yourself up.) Begin time on stopwatch at this point. The objective is to maintain a flexed-arm position with the chin above the bar as long as possible. Your legs should hang straight.



When your chin touches or falls below the bar, stop timing. Record your time in the chart below, and note the rating.

Flexed-Arm Hang Ratings

Females—time in seconds	Fitness Category
50 & above	Excellent
30 — 49	Good
20 — 29	Average
10 — 11	Fair
0 — 9	Poor

Number of Seconds: ____

Flexed-arm Hang Fitness Category: ____

Record your rating and improvement goals in the chart on page 147. Then answer the questions about your results.

Muscular Fitness

Muscular Fitness Results

Date	Test	Rating	Improvement Goals
	Grip Strength		
	Isometric Leg Squat		
	Curl-ups		
	Push-ups **Modified Push-ups**		
	Pull-ups (males) **Flexed-arm Hang** (females)		

What areas are most in need of improvement in muscular strength and endurance?

____

Which muscular fitness tests had the highest scores?

____

Write a plan of action to accomplish muscular fitness goals.

____

____

Isometric Exercises: Limited Gains but Convenient

Isometric exercises can be useful for individuals trying to rehabilitate an injury, people with certain physical disabilities, and for those confined to a small space. Remember, though, that the strength gains from isometric exercises are minimal.

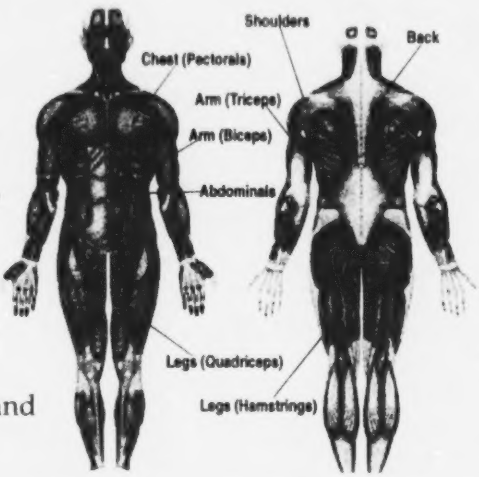
Isometric Exercises

Praying Hands	**Strengthens arms, shoulders, upper back**	Place palms of hands together at chest level. Either stand or sit. Press palms together for 6-10 seconds, then release.
Doorway Push	**Strengthens shoulders, arms**	Stand in doorway with arms extended down by sides, palms facing in. Raise arms from sides to doorway and push against door frame. Hold for 6-10 seconds and release.
Wall Sit	**Strengthens major muscles of legs**	Slide down the wall until knees form a 90ß angle. Feet should be flat on the floor and pointing directy forward. Relax extended arms by your sides. Hold position for 6-10 seconds and release.
Wall Posture	**Strengthens abdominals, back, and buttocks**	Place back to the wall with feet about 3" in front of you, knees slightly bent. Relax arms by your side. Contract your abdominal muscles and push your back, shoulders, and buttocks against the wall. Hold 6-10 seconds and release.
Pelvic Tilt	**Strengthens abdominals, back, and buttocks**	Lie on back with legs extended and arms next to body, palms down. Contract the abdominal muscles, and at the same time press the lower back against the floor. Hold 6-10 seconds and release.
Static Push-up	**Strengthens arms, chest, upper back**	Assume a face down position on a mat with your hands directly under your shoulders, legs extended, and toes tucked to support body. Lower the body until the arms and the elbows are flexed, or bent to a 90ß angle or less. Hold this position 6-10 seconds and release.

Isotonic Exercises/Calisthenics: Large Gains and Convenient

Many exercises for muscular fitness require little or no equipment besides the weight of your own body! Body conditioning exercises which use your own weight as resistance are called *calisthenics*. Calisthenics only permit you to increase the repetitions you do but not the (body) weight you use as resistance. Therefore, these exercises mainly develop muscular endurance and not muscular strength.

Major Muscle Groups



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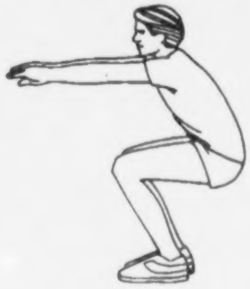
However, by adding free weights such as dumbbells, barbells, or strapped on weights to many of these exercises, you can develop muscular strength as well as muscular endurance.

Calisthenics are very popular and a great way to exercise in your own home! They help to develop firm, toned muscles.

The following are common exercises used to increase muscular fitness of the major muscle groups of the body. Try to complete one set of each exercise, performing as many repetitions as you can. As your muscular fitness improves you can either add one or two more sets, or add free weights to the exercises. Stretch the muscle groups that are being exercised between every set.



Exercises for the Thighs, Buttocks, and Legs

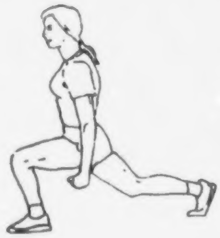
1. Half Squats

Purpose: Develops muscular strength and endurance in the thighs and buttocks.

Action: Start with your feet shoulder-width apart, your hands on hips or straight out in front of your body.

Slowly squat until your thighs are parallel to the floor, and then return to a full-standing position. Do not squat into deep-knee bend, or squat, as this position places too much stress on the knees.

To Increase Intensity: Hold dumbbells by your sides or a barbell on your shoulders.



2. Lunges

Purpose: Develops muscular strength and endurance in the thighs and buttocks.

Action: Stand with your feet together, your toes facing forward, and your arms at your sides.

Step forward, lunging with one foot so the knee of your lunging leg is over your heel, and the lower part of your leg is perpendicular to the floor. Push off with your front leg to return to starting position.

Alternate lunges, leading first with your right leg and then with your left leg.

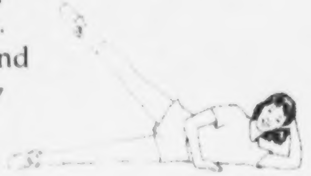
To Increase Intensity: Hold a barbell on your shoulders or dumbbells by your side.

3. Side Leg Raises

Purpose: Develops muscular strength and endurance in the outer thigh and buttock region.

Action: Lie on your left side and support your head with your left hand. Rest your right hand on the floor in front of your chest for balance. Extend your legs without locking knees.

Lift your right leg slowly up while keeping your bottom leg flat on the floor. Lower your leg slowly back to the starting position. Perform this exercise very slowly and in a controlled manner. Do as many repetitions as you can before switching to the other leg.



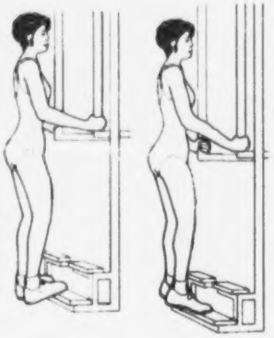
To Increase Intensity: Strap weights onto your ankles.

4. Heel Raises

Purpose: Develops muscular strength and endurance in the calves, the muscles in the lower leg.

Action: Place your feet shoulder-width apart, and rest your hands on hips. Stand tall with good upright posture.

Raise up on your toes as far as possible, and then lower back down until your heels touch the floor. Do as many repetitions as you can in a slow, controlled manner. Stretch your calf muscles, then repeat.



To Increase Intensity: Hold dumbbells by your sides or a barbell behind your head on the shoulders. Also, place your toes on an elevated surface approximately six inches high.

Exercises for the Upper Body

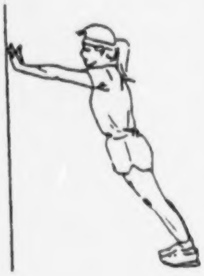
1. Push-Ups

Purpose: Develops muscular strength and endurance mainly in the chest.

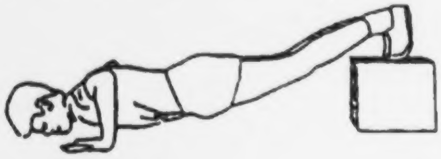
Action: Lie on your stomach with your body straight and your weight on your toes and hands. Place your hands shoulder-width apart.

Keeping your back straight, lower your whole body until your chest is about a fist's distance off the floor. Push yourself back up again. Exhale on the exertion of the movement. Perform push-ups in a slow, rhythmic fashion. It is important not to let your back sag or arch.

Modified Push-Ups

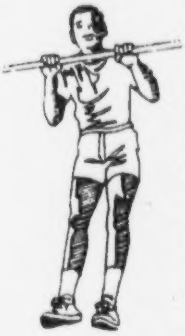


- **Wall push-aways** (easiest): Stand facing wall about 20 inches from wall. Place your hands shoulder-width apart on the wall. Slowly lower your chest to the wall as you bend your arms at the elbows. Return to the starting position.
- **Bent-knee push-ups:** With your knees on the floor and your back straight, perform push-ups in the same manner as standard push-ups.



- **Push-ups with feet elevated** (most advanced; box or raised surface needed): Place your feet on an elevated surface and your hands on the floor. Lower your body down and then extend your arms back up. Try to avoid arching your back.

2. Pull-Ups



Purpose: Develops muscular strength and endurance mostly in the back and arms.

Materials: a horizontal bar raised high enough so that when grasped the feet are off the floor

Action: Grasp the bar with palms forward, using an overhand grip, your hands shoulder-width apart, and your arms fully raised.

Pull your body up so that your chin is slightly above the bar. Lower your body back to an arms-extended position. Complete as many reps as possible. Use a spotter to give you a slight help so you complete more reps after you fatigue.

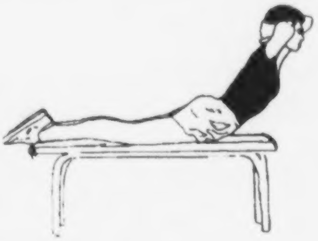
Variation: Pull-ups can also be done with a wider grip and pulling body up with bar behind the head and neck.

Modified Pull-Ups

Action: Lie flat on the floor under a horizontal bar that can be grasped at arm's length.

Grab the bar with your palms either facing out or in. With your body straight, lift your chin up to the bar as you keep your heels on the floor. Then lower your body to an arms-extended position. Complete as many reps as you can.

3. Back Arch



Purpose: Develops muscular strength and endurance in the lower back.

Materials: none

Action: Lie on your stomach with your fingers laced and placed behind your head. Slowly lift your head and chest off the floor as you keep your legs in contact with the floor. Keep your head in neutral alignment. Return to the starting position and repeat.

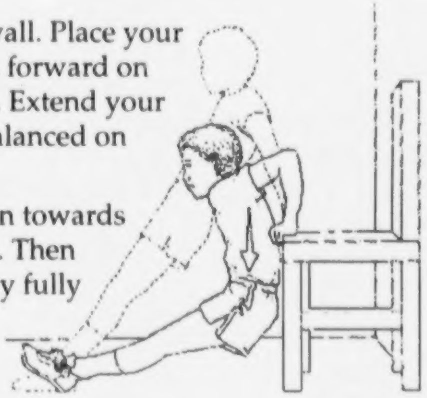
4. Chair Dips

Purpose: Develops muscular strength and endurance mainly in the triceps, or back of the arm.

Materials: a sturdy chair

Action: Place a chair against the wall. Place your hands with your knuckles forward on the front edge of the chair. Extend your legs forward so you are balanced on your heels.

Lower your buttocks down towards the floor as far as possible. Then raise your body back up by fully extending your arms. Exhale as you push your body up. Do as many reps as you can.



If chair dips are too difficult, substitute modified chair dips.

Modified Chair Dips

Action: Sit on the floor with your hands flat on the floor next to your hips and your fingers pointing outward.

Keeping your arms straight, raise your hips off the floor until your body is straight and at a 45-degree angle from the floor. Your heels and hands should be the only body parts touching the floor. Lower your buttocks towards the floor as you keep your arms straight. Complete as many reps as you can.

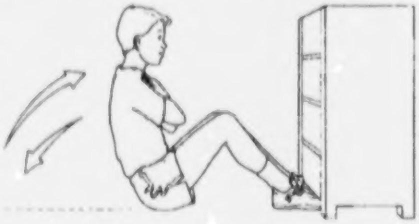
5. Curl-Ups

Purpose: Develops muscular strength and endurance in the abdominal muscles.

Materials: a couch or other secure object

Action: Sit with your legs bent at the knees and your feet flat on the floor with your heels about 12 inches from your buttocks. Cross your arms in front of your chest with your hands grasping the opposite shoulders.

Slowly lower your upper body and trunk back until your shoulder blades touch the floor. Lift your body off floor, exhaling as you come up. Touch your elbows to your thighs. Continue moving back and forth with slow, controlled movements.



To Modify: Place feet under a couch or other secure object.

Variation: Crunches

Action: Lie on your back with your knees bent, your feet flat on the floor, and your arms folded across your chest.

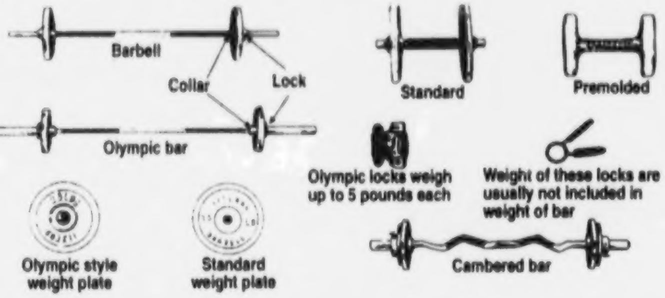
Curl your shoulders and upper back off the floor together as a unit. Slowly lower your body to floor. Exhale each time you come up. You can also add a twist to the crunches by alternately curling your shoulders and upper back toward your opposite knees.

Isotonic Exercises: Free Weights and Weight Machines

When you train with free weights and weight machines, you need to protect yourself from injury by selecting the appropriate weight to lift. Take a conservative approach when starting out: Lift less rather than more.

Remember the training principles for gaining muscular strength and endurance. If specific strength gains are your goal, you need to find a weight that will cause fatigue at between six and ten repetitions. If you want general strength and firm, toned muscles, but not a size increase, find a weight that will cause fatigue at between twelve to fifteen repetitions.

Free Weights


Barbell
Collar
Lock
Olympic bar
Standard
Premolded
Olympic locks weigh up to 5 pounds each
Weight of these locks are usually not included in weight of bar
Olympic style weight plate
Standard weight plate
Cambered bar

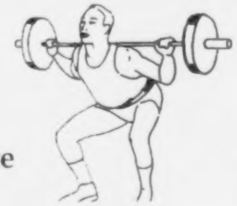
Muscular Fitness

Become familiar with free-weight equipment. The most commonly used free-weight equipment used when lifting are dumbbells, barbells, locks, and weight plates. When you train with weight machines, you need to find a certified instructor to show you how to use the equipment safely and properly. There are many settings on the weight equipment that need to be adjusted for your individual body size. Most machines can be adjusted to vary the seat, arm, leg, and weight settings.

How you breathe during a lift is very important. Always breathe out when raising or pushing a weight. Always breathe in when lowering or releasing a weight. *Never* hold your breath when lifting or pushing a weight. Holding your breath can damage your heart and lungs.

Here are a few of the more common exercises for training on free weights and weight machines.

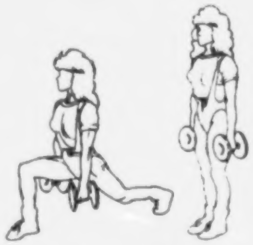
Exercises for the Thighs, Buttocks, and Legs



1. Half Squats (using free weights)

Purpose: Develops muscular strength and endurance in the thigh and buttocks muscles.

Action: Rest a barbell across your shoulders behind your neck. Keeping your back as straight as possible, bend your knees and lower your body into a half-squat position. Do not let your knees flex beyond your toes. Slowly, stand up straight again.

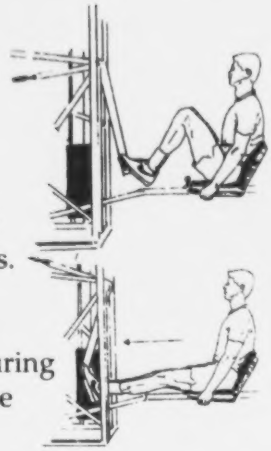


2. Lunges (using free weights)

Purpose: Develops muscular strength and endurance in the thigh and buttocks muscles.

Action: Hold a dumbbell in each hand, and keep your arms down at your sides. Lunge forward with your right foot, bending at the knee. To avoid strain, keep your knee in line with your ankle. Push off with your front leg to return to the starting position. Alternate lunges moving forward and back off your right leg and then off your left leg. Lunges can also be performed with a barbell on the shoulders.

3. Leg Press (using weight machine)



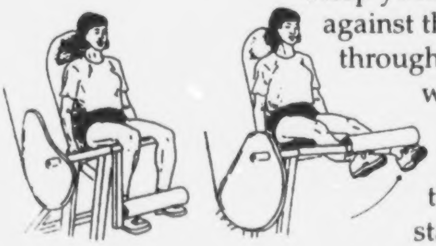
Purpose: Develops muscular strength and endurance in the thigh and buttocks muscles.

Action: Sit with your torso upright and your back against the back of the seat. Your legs should be flexed 90 degrees or less. Holding onto the handrails, push the footpad to the extended knee position without locking your knees. Exhale during the outward press. Slowly, return to the starting position.

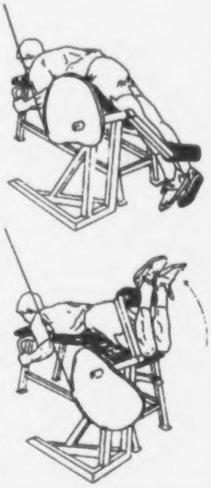
4. Knee Extension (using weight machine)

Purpose: To develop muscular strength and endurance in the muscles in the front of the thighs—the quadraceps.

Action: Sit on the seat and place your ankles under the roller pad. Keep your torso erect and your lower back flat against the seat. Slowly extend your lower legs through a complete range of motion. Exhale while extending your legs. Pause briefly in the extended position, and then slowly lower the weight without letting the weight plate hit the stack. Repeat until the set is completed.



5. Knee Flexion (using weight machine)



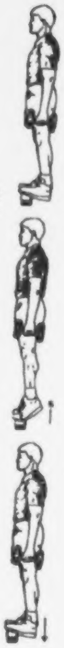
Purpose: Develops muscular strength and endurance in the hamstrings, or the back of the thigh.

Action: Lie on your stomach and grip the handles or edge of the bench. Place your kneecaps below the edge of the bench with your ankles under the pads. Flex your legs at the knee as you bring your heels as far as possible towards your buttocks. Exhale during the upward movement. Pause briefly in the fully flexed position. Then lower the weight slowly, but don't allow your hips to rise off the bench. Repeat until set is completed.

6. Heel Raises (using free weights)

Purpose: Develops muscular strength and endurance in the calf muscles.

Action: Place a barbell on your shoulders or hold dumbbells down at your sides. Place the balls of your feet on the edge of an elevated and stable surface about six inches high. Place your feet about hip-width apart. Keep your torso erect and your legs straight. Slowly come up onto your toes, raising your heels as high as possible. Exhale as you lift up. Slowly lower your heels to a full stretch without pain. Do not bend your torso or flex your knees.

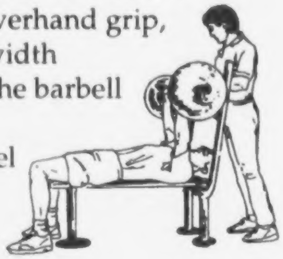


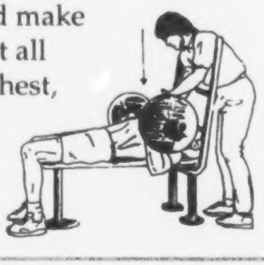
Exercises for the Upper Body

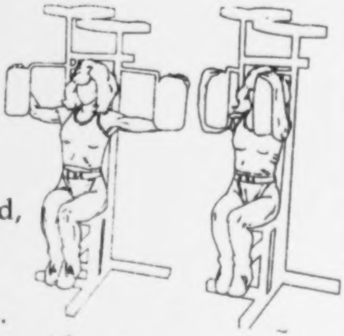
1. Bench Press (using free weights)

Purpose: Develops muscular strength and endurance in the chest muscles.

Action: Lie on your back on the bench with your feet flat on the floor. Grasp the barbell with an overhand grip, hands slightly wider than shoulder-width apart. A spotter should help you lift the barbell off the standards. Press the barbell straight up above your mid-chest level until your arms are fully extended, but not locked at the elbow. Exhale during the upward movement. Do not bounce the bar off your chest, and make sure your hips remain on the bench at all times. Slowly, lower the bar to your chest, and continue until you complete the set. Support the barbell until the spotter can help you rack it.



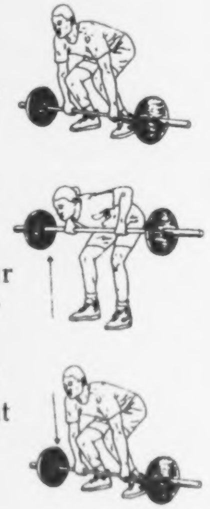




2. Pec Deck (using weight machine)

Purpose: Develops muscular strength and endurance in the chest muscles.

Action: Sit on the seat with your back, head, and shoulders in contact with the back pad. Align your shoulders with the machine's axis of rotation. Squeeze the pads or rollers together with your forearms, not your hands. Exhale as your elbows come together, pulling the arm pads in front of your chest. Continue reps until you complete the set.



3. Bent-Over Rowing (using free weights)

Purpose: Develops muscular strength and endurance in the large muscles of the back.

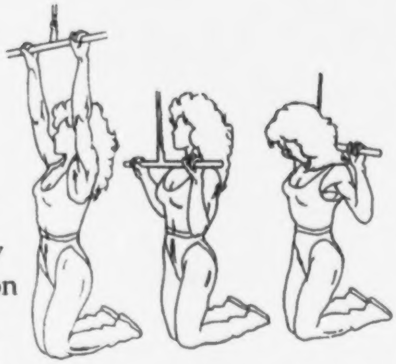
Action: Bend over to pick up the barbell with an overhand grip and your knees flexed. Keep your shoulders higher than your hips, your lower back flat, your arms straight, and your head up facing forward. Slowly pull the bar straight up until it touches your mid-chest. Exhale as you lift the barbell and keep your torso rigid. Slowly, lower the barbell straight down. Extend your arms fully without allowing the weight to touch the floor. Continue reps until you complete the set.

4. One-Arm Dumbbell Rowing (using free weights)

Purpose: Develops muscular strength and endurance in the large muscles of the back.

Action: Using a bench for support, bend at your waist with your back parallel to the floor. Grasp a dumbbell in one hand and place your other hand and knee on a bench for back support. Exhale as you pull the dumbbell to your chest. Pause briefly then slowly lower the weight until your arm is extended. Continue reps until you complete the set.

5. Lat Pulldowns (using weight machine)



Purpose: Develops muscular strength and endurance in the large muscle groups of the back.

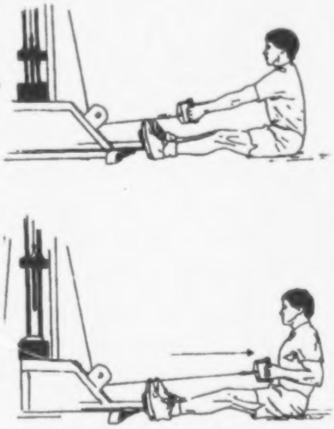
Action: Grasp the long bar with an overhand grip slightly wider than shoulder-width. You may either sit on the bench, kneel on one leg, or kneel on both legs. Keeping your torso erect, pull the bar smoothly straight down. Keep your elbows out and away from your body. Exhale as you pull the bar down to the base of your neck. Slowly extend your arms back upward. Continue reps until you complete the set.

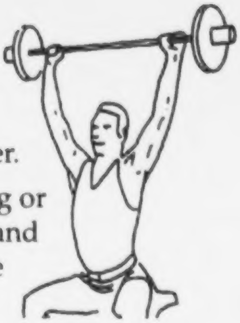
For variation you can also pull the bar to the front of your body at chest level.

6. Seated Rows (using weight machine)

Purpose: Develops muscular strength and endurance in the large upper back muscles.

Action: Assume a seated position either on the floor or bench with your knees slightly flexed. Keeping your torso erect, grasp the handles with palms facing inward. Exhale while pulling the handles smoothly into your chest. Pull with your arms and back, keeping your back upright. Avoid letting your torso pull the weight. Return to the arms-extended position. Continue reps until you complete the set.

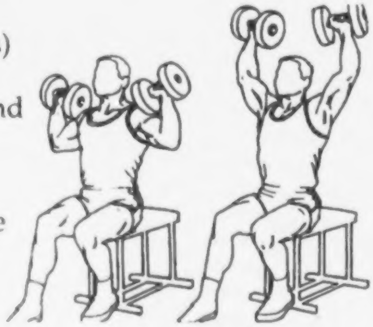




7. Military Press (using free weights)

Purpose: Develops muscular strength and endurance in the muscles of the shoulder.

Action: This exercise can be done either standing or seated. Grasp the barbell with an overhand grip about shoulder-width apart. Exhale while pressing the bar upward and overhead until your arms are fully extended. Slowly lower the bar to chest position. Continue reps until you complete the set.



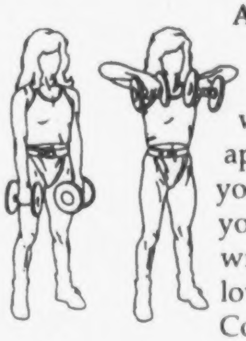
8. Seated Dumbbell Press (using free weights)

Purpose: Develops muscular strength and endurance in the shoulder muscles.

Action: Grasp the dumbbells and place them at your chest level. With your palms facing outward, press the weights upward and overhead until your arms are fully extended. Slowly lower the weights back down to your chest. Continue reps until you complete the set.

9. Upright Rows (using free weights)

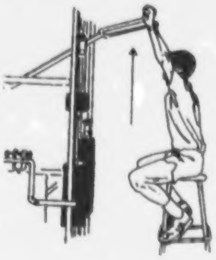
Purpose: Develops muscular strength and endurance in the shoulder muscles.

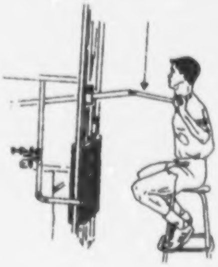


Action: In a standing position, grasp dumbbells with an overhand grip, placing your hands about two to four inches apart. Rest the dumbells on your thighs with your arms extended and your feet shoulder-width apart. Exhale while pulling the dumbbell upward along your abdomen and chest. As you pull the dumbell to your shoulders, keep your elbows higher than your wrists. Pause briefly at the top position, then slowly lower the dumbbell until your arms are fully extended. Continue reps until you complete the set.

Variation: Upright rows can also be performed with a barbell.

10. Military Press (using weight machine)





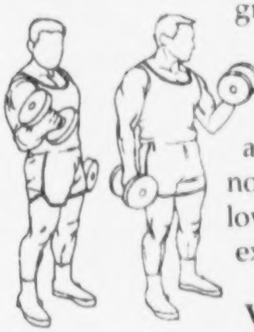
Purpose: Develops muscular strength and endurance in the shoulder muscles.

Action: Assume a seated position on a stool or bench so that the front of your shoulders are directly below handles. Grip the handles with your palms forward and shoulders directly under the handles. Keep your lower back flat. Exhale while pushing the weight upward to complete the extension. Slowly return back to the starting position without letting the weights touch. Continue reps until you complete the set.

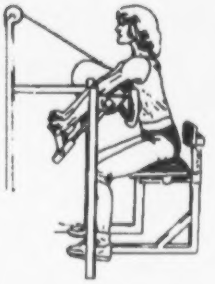
11. Biceps Curl (using free weights)

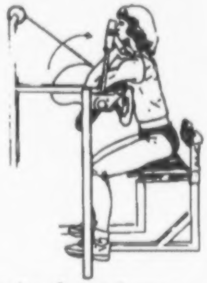
Purpose: Develops muscular strength and endurance in the biceps or the upper arm muscles.

Action: Stand erect and grasp the dumbbell with an underhand grip with your hands shoulder-width apart. Hold your upper arms against your ribs with your arms down and the dumbbell touching the front of your thighs. Keeping elbows to your sides, curl the dumbbells one at a time to shoulder level while exhaling on the lift. Do not jerk or swing your body to lift the weight. Slowly lower the dumbbells to your sides with your arms fully extended.



Variation: The biceps curl can also be performed using a cambered (curved) bar or straight barbells.





12. Preacher Curls (using weight machine)

Purpose: Develops muscular strength and endurance in the biceps muscle, or the muscle on the front of the arm.

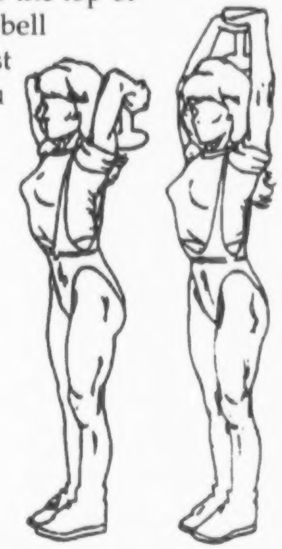
Action: Sit with your chest against the pad. Place your elbows on the pad in line with the machine's axis of rotation. Using an underhand grip, curl the handles upward as far as possible. Exhale on the lift. Slowly lower the bar until your arms are extended, but not locked. Continue the reps until you complete the set.

13. Triceps Extension (using free weights)

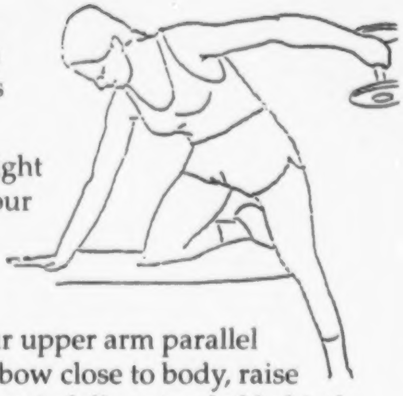
Purpose: Develops muscular strength and endurance in the triceps, the muscles on the back of the upper arms.

Action: Start in a standing position. Grasp a dumbbell using an overhand grip and your hands about six inches apart. Keep your torso erect and your feet shoulder-width apart. Hold your elbows straight up and close to your ears. Lower the dumbbell slowly behind your head to the top of your shoulders. Then push the dumbbell to full extension, exhaling on the most difficult part. Continue reps until you complete the set.

Variation The triceps extension can also be done with a straight barbell or cumbered (curved) bar.



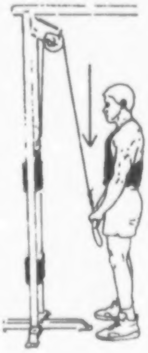
14. Kickbacks (using free weights)

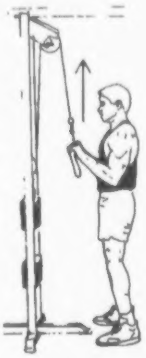


Purpose: Develops muscular strength and endurance in the triceps muscle.

Action: Place your right hand and right knee on a bench. Support your body with the other leg on the floor. Grasp a dumbbell in your left hand with your arm bent and your upper arm parallel to the floor. Keeping your elbow close to body, raise the dumbbell so that your arm is fully extended behind you. Slowly lower the weight back down, keeping your upper arm parallel to the floor. Continue reps until you complete the set.

15. Pressdowns (using weight machine)





Purpose: Develops muscular strength and endurance in the triceps muscle.

Action: Assume an erect standing position facing the weight machine with your feet about shoulder-width apart. Grasp the bar using an overhand grip and your hands no more than six inches apart. Begin the exercise with the bar at chest height with your upper arms pressed firmly against your ribs. Exhale while extending your forearms until your arms are fully extended and the bar is touching your thighs. Slowly return the bar to chest height without moving your upper arms and torso. Continue reps until you complete the set.

Muscular Fitness

Summary

Muscular fitness is important for overall health and fitness. Muscular fitness includes both *muscular strength* and *endurance*. Muscular strength is the ability of a muscle to exert a maximum force in a single effort. Muscular endurance is the ability of a muscle to continue to do work repeatedly over time without *fatigue*.

Improving muscular strength and endurance leads to better appearance, greater resistance to injury, weight loss, and weight maintenance.

A lack of adequate muscular strength or endurance can increase your risk for muscle and joint injuries, diabetes, heart disease, bone loss, back pain, and posture problems. It is much more difficult to control your appropriate body weight without sufficient muscle tissue.

There are two types of *muscle fibers* found in *skeletal muscle*. *Slow-twitch muscle fibers* help in endurance activities; *fast-twitch muscle fibers* are useful for activities requiring speed and *power*.

Isometric, *isotonic*, and *isokinetic* are three methods of exercising to develop muscular strength and endurance. Isometric exercises consist of a muscle contracting, or tightening, while pressing against an immovable object. Isotonics are exercises that cause the muscle to lengthen and shorten through a full *range of motion* while lifting and lowering a weight or resistance. *Calisthenics*, *free weights*, and most weight machines are isotonic. Isokinetic exercises require specially designed machines that work the muscle through the entire range of motion using variable resistance and speed.

To improve muscular strength or endurance, a muscle needs to be consistently overloaded, or worked harder than it is used to. Frequency, intensity, and time should be altered periodically to insure continued progress in a muscular fitness program. If *muscle tone* is desired, then high *repetitions* and low weight should be performed. If muscular strength is desired, then lift heavier weight and perform fewer repetitions.

To ensure safety and best results from a muscular fitness program, always follow safety guidelines. A few of these include beginning with a warm-up, using proper form on all exercises, working the large muscles first, exercising through a full range of motion, using slow and controlled movements, breathing correctly, and ending with a cool-down.

Both males and females can benefit from muscular fitness exercises. Females need not worry about bulking up since they do not have enough of a certain hormone.

Strong muscles make everyday tasks of living, work, and recreation easier and more satisfying.

Fitness Career Opportunity!

The Physical Education Teacher

Physical education teachers teach and assess physical fitness, athletic skills, sportsmanship, and promote wellness and healthy lifestyles. Physical education teachers work in elementary schools, middle schools, high schools, or colleges. They are responsible for such things as designing physical fitness and athletic activities, maintaining equipment, and managing budgets.

In the growing field of adaptive physical education, teachers work with children who have physical handicaps, learning disabilities, and emotional problems.

The Coach

Many physical education teachers are also coaches. Coaches head sports teams in schools, colleges, professional or youth leagues. They teach and evaluate sports skill, develop game strategies, develop physical conditioning drills and exercises, recruit players, and often oversee team administration.

For more information on physical education teaching and coaching, contact:

National Association for Sport & Physical Education (NASPE)
Reston, Virginia 22091
(703) 476-3410

American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD)
1900 Association Dr.
Reston, Virginia 22091
(703) 476-3400

National High School Athletic Coaches Association
Winter Park, Florida
(800) 262-2495

Muscular Fitness

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

________ 1. Slow-twitch muscle fibers have the ability to continue working for long periods of time.

________ 2. Isometric exercises move the muscles through a full range of motion.

________ 3. Fast-twitch muscle fibers are best for fast, short-term contractions such as sprinting.

________ 4. A muscle must lift more as the body adapts to the overload if it is to become stronger.

________ 5. Isometric exercises move the muscle through a full range of motion.

________ 6. The basic unit of the muscular system is the muscle fiber.

________ 7. Everyone is born with a different number of slow-twitch and fast-twitch muscle fibers.

________ 8. You cannot improve the fitness and performance of your slow- and fast-twitch muscle fibers.

________ 9. Not having adequate muscular strength and endurance will make it more difficult to maintain your proper body weight.

________ 10. Isokinetic exercises require the use of special exercise machines.

________ 11. You should hold your breath when you lift weights.

Muscular Fitness

________ 12. If you are new to a muscular fitness program, you should first focus on developing muscular strength rather than muscular endurance.

________ 13. Since the large muscles require the most energy, they should be worked before the smaller muscles.

________ 14. A spotter is for your safety when lifting weights.

________ 15. You must experience pain in your muscle strengthening workouts to make improvements.

________ 16. To continually progress in a muscular fitness program, you must continually overload your muscles.

________ 17. An instrument used to measure leg strength is a dynamometer.

________ 18. The ability of a muscle or muscle group to exert maximal force in a single effort is called *muscular endurance*.

________ 19. Repetitions are the number of times a complete exercise is performed.

________ 20. A lack of muscular fitness can increase the risk of diabetes, heart disease, and certain cancers.

Identification

Use the word list below to identify the primary area of the body each exercise develops. Write the correct answer on each line. Terms will be used more than once.

thighs, buttocks, legs
back
chest
abdominals
shoulder
arms

1. half squats: ____________________
2. pulldowns: ____________________
3. biceps curl: ____________________
4. heel raises: ____________________
5. military press: ____________________
6. bench press: ____________________
7. crunches: ____________________
8. chair dips: ____________________
9. bent-over rowing: ____________________
10. leg press: ____________________
11. push-ups: ____________________
12. preacher curl: ____________________
13. upright rows: ____________________
14. curl-ups: ____________________

Muscular Fitness

Completion

List three exercises to develop each muscle group listed in the chart below.

Exercise Identification	
Back	1. ______ 2. ______ 3. ______
Chest	1. ______ 2. ______ 3. ______
Abdominals	1. ______ 2. ______ 3. ______
Legs	1. ______ 2. ______ 3. ______
Arms	1. ______ 2. ______ 3. ______
Shoulders	1. ______ 2. ______ 3. ______

Muscular Fitness

Identification

Write the correct vocabulary term for each definition below.

____________________ 1. a group of repetitions performed without resting

____________________ 2. strands in the muscle that contract quickly and are useful for short, intense bursts of action

____________________ 3. strands in the muscle that contract slowly and have the ability to work for long periods of time

____________________ 4. the ability of a muscle or group of muscles to repeat a movement over a period of time without tiring

____________________ 5. the basic unit of the muscular system; a strand of fiber

____________________ 6. exercises done on specially designed exercise machines that work the muscle with maximum resistance throughout the muscle's entire range of motion

____________________ 7. exercises that cause a muscle to lengthen and shorten through a full range of motion while lifting and lowering a weight or resistance

____________________ 8. firm and defined muscles resulting from muscular strength and endurance exercises

Muscular Fitness

________________ 9. exercises in which a muscle or group of muscles repeatedly push or pull against an opposing force; also called *weight training*

________________ 10. exercises performed against resistance to develop and improve muscular strength and endurance; also called *resistance training*

________________ 11. exercises that use the weight of one's body as a resistance

________________ 12. objects of various weights used for developing or increasing muscular fitness

________________ 13. the ability of a muscle or groups of muscles to exert maximal force in a single effort

________________ 14. tiredness or exhaustion; to tire out

________________ 15. the number of times a complete exercise is performed; also called *reps*

________________ 16. includes two health-related components of physical fitness: muscular strength and muscular endurance

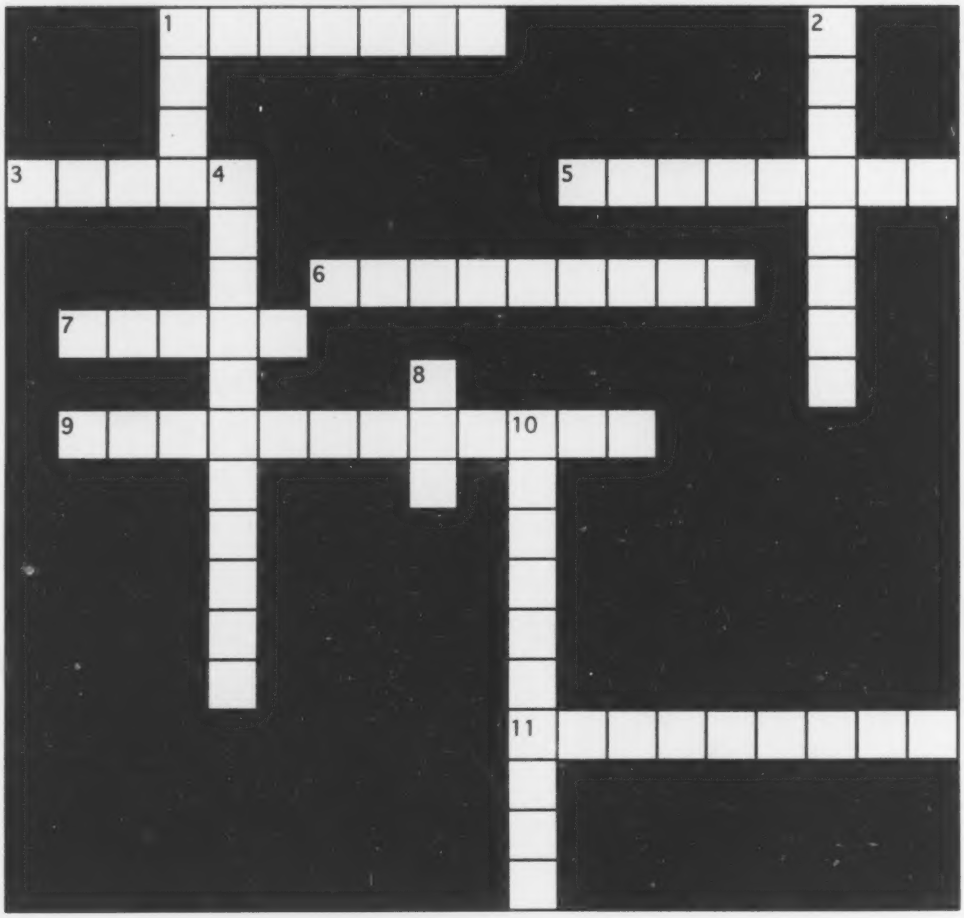
________________ 17. the ability to use maximum strength in a fast movement

________________ 18. muscles that attach to the skeletal bones by tendons

________________ 19. exercises that work a muscle against an imovable object

Solve

Use the clues on the next page to solve the crossword puzzle below.


1
2
3
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9
10
11

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Muscular Fitness

Across

1. tiredness or exhaustion
3. the ability to use maximum strength in a fast movement
5. Muscles that attach to the skeletal bones by tendons are called ______ muscles.
6. exercises that work a muscle against an immovable object.
7. Muscle ______ is the basic unit of the muscular system.
9. exercises that use the weight of one's body as a resistance
11. Muscular ______ is the ability of a muscle or group of muscles to repeat a movement over a period of time without tiring.

Down

1. Objects of various weights used for developing or increasing muscular fitness are called ______ weights.
2. exercises that cause a muscle to lengthen and shorten
4. the number of times a complete exercise is performed
8. a group of repetitions performed without resting
10. exercises done on specially designed exercise machines

5

Cardio-vascular Fitness

What's Inside?

An Internal View of the Heart

Cardiovascular Fitness

Vocabulary

Study the vocabulary words and definitions below.

aerobic	with oxygen
aerobic exercise	activities that use the large muscle groups continuously and use oxygen for energy
anaerobic	without oxygen
anaerobic exercise	very high energy activities that do not use oxygen for energy; anaerobic activities are very strenuous and can only be performed for a short period of time
aorta	the largest artery in the body, through which oxygen-rich blood from the heart flows towards the body's tissues
arteries	blood vessels that carry blood *away from the heart* to the body's tissues
atrium	one of the two upper chambers of the heart (atria, *pl.*)
blood pressure	the measure of blood force being pushed against the walls of the arteries as blood is pumped by the heart

Cardiovascular Fitness

capillaries	the smallest blood vessels in the body's tissues
carbon dioxide	the gas which is exhaled by the lungs during respiration as a waste product
cardiac	refers to the heart
cardiovascular	refers to the heart and its blood vessels; *cardio* means heart; *vascular* means vessels
cardiovascular disease (CVD)	a condition that narrows the passageways in the coronary arteries, reducing blood flow to the heart muscle; also called *coronary artery disease (CAD)*
cardiovascular fitness	the body's ability to deliver oxygen to working muscles; a health-related component of fitness
carotid artery	a major artery on both sides of the neck; often used for measuring heart rate
cholesterol	a fat-like substance found only in food from animal sources; some foods with high cholesterol include whole milk products, meat, animal fats, and egg yolks

Cardiovascular Fitness

circulatory system	consists of the heart, blood vessels, and the blood; also referred to as the *cardiovascular system*
cool-down	the tapering off period after exercise that allows the body to gradually return to a resting state
coronary arteries	the blood vessels that provide blood to the heart muscle
heart attack	the damage or death of part of the heart muscle caused by a lack of blood; may result from coronary artery disease
heart rate	the number of times a heart beats or pumps blood per minute; also referred to as *pulse rate*
high blood pressure	an increase in blood pressure above its normal range; also called *hypertension*
maximum heart rate	the highest number of times a person's heart can beat per minute; found by subtracting your age from 220
pulse	the beat of the heart felt by the pressure of the blood on the artery walls

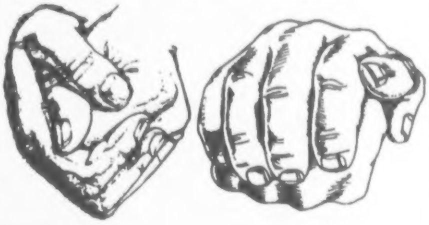
radial artery	the artery on the inside of your wrist; can be used to measure your heart rate
recovery heart rate	heart rate taken after exercise
respiratory system	made up of lungs and air passages that help supply oxygen to the body
risk factor	a habit or condition that may increase an individual's chance of developing an illness or disease
training effect	refers to positive physical fitness changes in the body as a result of exercise
target heart rate zone	the range within which an individual needs to exercise to gain cardiovascular benefit
valves	flaps of tissue in the heart that open and close to control blood flow
veins	blood vessels that carry blood *back to the heart*
ventricle	one of the two lower chambers of the heart that pumps blood to the lungs or muscles

Cardiovascular Fitness

Introduction

Do you often find yourself gasping for air when you exercise or participate in a sport? Have you ever become winded after walking up a flight of stairs? If you sometimes are short of breath, your body may not be delivering enough oxygen to its muscles and tissues. The body sends oxygen to the muscles through the blood. And the blood can only flow to the many muscles in the body if it is pumped by the heart. Your heart must be strong enough to continuously pump blood through the blood vessels to all parts of your body. No other muscle in your body works as hard as your heart. If your heart cannot meet your body's needs for oxygen, you will feel out-of-breath and tired.

Your heart is one of the body's many remarkable features. It is a hollow, muscular organ a little larger than the size of your fist. It is pear-shaped and weighs a mere 12 ounces, or about the weight of a large orange. It lies behind the breastbone and between the lungs, slightly to the left of the midline of your body. When you "pledge allegiance to the flag," you are placing your hand over your heart.



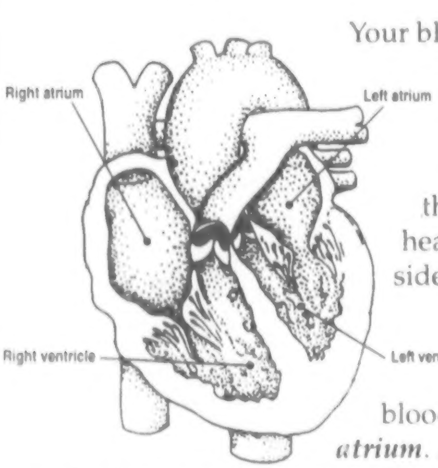
The heart, the body's thousands of miles of blood vessels, and the body's 12 pints of blood make up the ***cardiovascular system***. (*Cardio* means heart; *vascular* means blood vessels.) Together, these parts work to deliver oxygen and nutrients to the muscles in the body.

Cardiovascular fitness is the body's ability to deliver oxygen to the working muscles. Improving your cardiovascular fitness will give you more energy, make you feel better, and make you look healthier. By keeping your heart strong and fit, you decrease the chance of developing heart problems. A fit heart increases the chance that you will lead a long and healthy life.

The Cardiovascular System: The Heart; Blood Vessels; and Blood

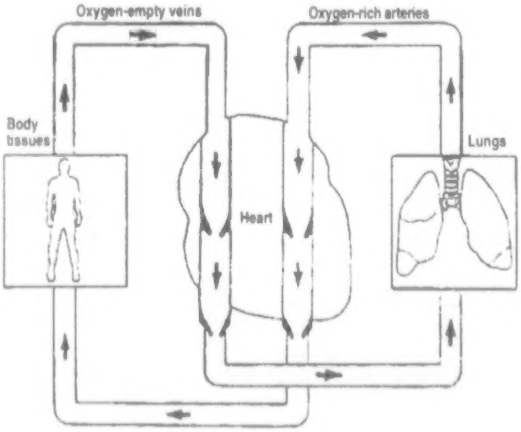
All of the muscles in the body use oxygen as a fuel. The muscles need oxygen or they will eventually die. The cardiovascular system, also called the ***circulatory system***, circulates blood throughout the body. This system works by pumping blood through a circular network of blood vessels. As the blood passes muscles, it delivers oxygen and nutrients and carries away waste products.

The Heart



Your blood receives oxygen from the air you have breathed into your lungs. This *oxygen-rich* blood has a bright red color. It travels to your heart, which will pump it throughout your body. You may think of the heart as a single pump. However, the heart is actually two pumps that lie side by side. Each pump contains two chambers, or rooms. The blood carrying oxygen flows into the two chambers on the left side of the heart. First this oxygen-rich blood fills the top left chamber, called the ***left atrium***. A **valve**, or flap of tissue that works like a swinging gate, then opens. The blood in the left atrium flows into the lower left chamber, called the ***left ventricle***. The ventricle then pumps the oxygen-rich blood out of the heart through a very large blood vessel called the ***aorta***.

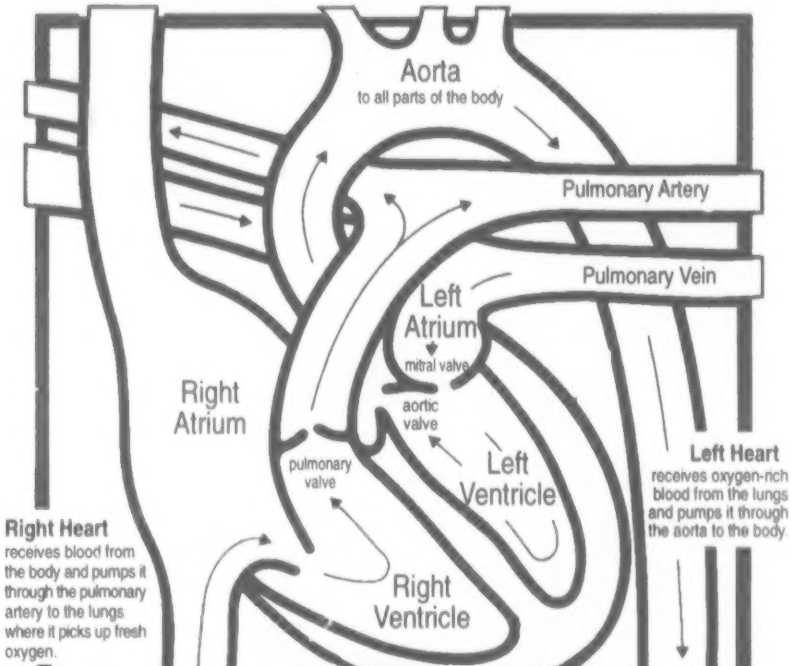
The Heart's Double Pump System



From the aorta, many smaller blood vessels branch out through body. These blood vessels that carry oxygen-rich blood to the body's muscles are called ***arteries***. As arteries branch out through the body they grow smaller and smaller. The smallest blood vessels are called ***capillaries***. The oxygen and nutrients in the blood pass through the very thin walls of capillaries and into the cells in the muscles. As the cells in a muscle use the oxygen, they produce waste. This waste material passes back through the thin walls of the capillaries and are carried away by the blood. This blood without oxygen and carrying waste has a dark, bluish-red color.

The oxygen-empty and waste-filled blood is pumped towards the heart. From the capillaries the blood flows into larger blood vessels called ***veins***. When the blood reaches the heart, it flows into the top chamber on the right-side of the heart. This chamber is called the *right atrium*. A valve in the atrium then opens, letting the blood flow down into the *right ventricle*. From there the heart pumps the blood into the lungs. In the lungs, the blood exchanges its waste for oxygen. The oxygen-rich blood then repeats its circular journey. The gaseous waste that has been left in the lungs is exhaled as **carbon dioxide**.

Tracing Blood through the Circulatory System


Aorta
to all parts of the body
Pulmonary Artery
Pulmonary Vein
Left Atrium
mitral valve
aortic valve
Right Atrium
pulmonary valve
Left Ventricle
Right Ventricle

Right Heart
receives blood from the body and pumps it through the pulmonary artery to the lungs where it picks up fresh oxygen.

Left Heart
receives oxygen-rich blood from the lungs and pumps it through the aorta to the body.

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Why is Cardiovascular Fitness Important?

Your muscles can be weak, and you still may be able to carry your body. Your muscles may be inflexible, and you still may be able to bend down. But if your cardiovascular system cannot deliver enough oxygen to your muscles, you will quickly run out of energy. Without energy, your muscles cannot continue to work. Cardiovascular fitness is *the* most important fitness component. Exercising your cardiovascular system is just plain "heart smart." And, like all of the other fitness components, cardiovascular fitness will improve your overall health.

Exercise Provides...

Physical Benefits

- Tones and strengthens muscles
- Burns off calories for weight control
- Improves body composition in favor of more lean body mass and less body fat
- Helps control appetite
- Improves posture
- Increases reaction speed
- Increases sensory awareness
- Decreases risk for injuries

Health Benefits

- Lengthens life
- Improves the quality of life
- Reduces risk of premature heart attack and stroke
- Lowers resting blood pressure
- Creates healthy blood cholesterol levels
- Decreases body fat and helps weight control
- Improves bone mass
- Improves digestion
- Reduces risk of diabetes
- Creates healthy blood vessels
- Improves circulation
- Increases lung's ability to process oxygen
- Increases heart's ability to pump blood
- Increases resistance to illnesses and diseases

Personal Benefits

- Increases energy levels
- Improves self-esteem and self-confidence
- Helps in coping with stress
- Increases resistance to fatigue
- Increases mental efficiency
- Helps counter anxiety and depression
- Helps in relaxation and decreasing tension
- Enhances sleep
- Provides an activity to share with family and friends

The Best Exercise for Developing a Healthy Heart: Aerobic Exercise

The word ***aerobic*** means with oxygen. During **aerobic exercise**, the body uses oxygen for energy. The more oxygen the body uses, the harder the cardiovascular system will work. When the cardiovascular system works hard, it becomes more fit. Aerobic exercise increases cardiovascular fitness better than any other type of activity.

Cardiovascular Fitness

Aerobic exercises are continuous activities that use the large muscle groups of the body, especially in the lower body. The muscles need additional energy to keep working for an extended period of time. The muscles get their energy or fuel from oxygen-rich blood. This increased need for more oxygen-rich blood makes the heart beat faster and pump more blood. Increasing your **heart rate** exercises your heart muscle and makes it stronger.

Jogging for at least 15 minutes is a good example of an aerobic exercise. Jogging uses the large muscle groups, such as your leg and arm muscles, to move you forward. These muscles need fresh supplies of oxygen-rich blood to replace the energy used. To meet these needs, your heart rate increases.

All activities that use the large muscle groups will raise your heart rate. However, some activities do not raise your heart rate enough to improve cardiovascular fitness. An activity must raise your heart level to a level called the ***target heart rate zone (THRZ)***. Continuous activities such as jogging, walking, rope jumping, cycling, and swimming are all aerobic exercises. In-line skating, step aerobics, aerobics classes, and cross-country skiing are also aerobic activities. All of these exercises train your body to use oxygen more efficiently.

Anaerobic activities are those which do not use oxygen for energy. (*Anaerobic* means without oxygen.) **Anaerobic exercises** are very strenuous. A person can only do anaerobic for a short period of time before rest is needed. Anaerobic exercises demand short bursts of energy. They also involve quick starts and stops. Sprinting and weight lifting are examples of anaerobic activities.

Your heart, brain, and most body organs have very limited anaerobic ability. These tissues are mostly aerobic and require a continuous supply of oxygen, or they will die. Skeletal muscles, on the other hand, have both anaerobic and aerobic ability.

Effects of Aerobic Exercise: Strengthening the Heart and Other Muscles

As you become aerobically fit, your heart and muscles become stronger and work more efficiently. Aerobic exercise leads to many healthy *adaptations,* or changes, in the cardiovascular and **respiratory systems**. The *respiratory system* includes the lungs—air passages that help supply the body with air.

Increased Stroke Volume. *Stroke volume* is the amount of blood pumped by the heart during a beat. Regular aerobic exercise allows a fit individual to pump more blood per beat. A fit heart uses fewer beats than an unfit heart to pump the same amount of blood. A fit heart also will have a lower resting heart rate.

Exercise Increases Heart Rate. During aerobic exercise your heart rate can increase to almost double your resting heart rate. A fit person can comfortably train aerobically at the target heart rate zone. Your target heart rate zone is the range within which you need to exercise to gain cardiovascular benefit.

Increased Cardiac Output. ***Cardiac** output* is the amount of blood pumped by the heart in one minute. Aerobic training can increase the ability of the cardiac output to pump at almost eight times its resting rate.

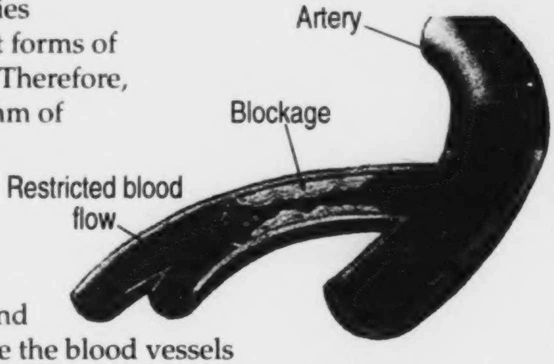
Increased Ability to Regulate Blood Flow. Regular aerobic exercise trains the body to circulate more blood to the muscles during exercise.

Increased Oxygen Delivery to the Body. Oxygen and carbon dioxide exchange is more efficient as you become more fit. Aerobic training increases the body's ability to remove carbon dioxide and other waste products.

Improved Rate and Depth of Breathing. This training adaptation allows you to work harder without getting out of breath.

Cardiovascular Diseases: The Heart of the Matter

Coronary Artery Disease



The number one killer in America is **cardiovascular disease (CVD)**. More than two out of every five Americans die from CVD. In fact, someone dies from CVD every 34 seconds. Most forms of CVD start early in a person's life. Therefore, you should begin a regular program of cardiovascular exercise now and make it a permanent part of your lifestyle.

Coronary artery disease (CAD) is the major cause of heart disease and **heart attack**. **Coronary arteries** are the blood vessels that provide the heart muscle with oxygen. Even though the heart's chambers are filled with blood, this blood cannot cross the heart's walls. The heart can only receive oxygen from the blood flowing through the coronary arteries.

CAD develops when fatty deposits build up on the inner walls of the coronary arteries. When these walls harden and narrow, the heart cannot receive oxygen-rich blood. When oxygen cannot get to the heart muscle, part of the heart muscle is damaged or dies. A heart attack is the damage or death of part of the heart muscle caused by a lack of blood.

Risk Factors for Heart Disease

A **risk factor** is a habit or condition that may increase an individual's chance of developing an illness or disease. There are several risk factors that may increase your chance of developing CAD. Individuals with CAD have an increased chance of having a heart attack. Many risk factors for heart disease are habits that people can eliminate from their lives.

Risk Factors That You Can Control: Habits and Choices

How you live your life plays a major role in determining your risk for heart disease. The more risk factors you have, the greater your chance for heart disease. You can eliminate or control most of the risk factors by practicing good health habits.

Good health habits begin with what we put into our bodies. Most of us know we should put healthy food in our bodies and limit the unhealthy food we eat. In addition, when we fill our lungs and blood with poisons from cigarettes, we risk heart disease. In fact, a person who smokes is twice as likely to have a heart attack as a nonsmoker. Similarly, a person who abuses alcohol increases the chances that he or she will develop heart disease.

"Heart Smart" practices also include what we do with our bodies. Regular cardiovascular exercise helps keep the heart healthy. Other "heart smart" practices include relaxation techniques to lower stress and tension.

Two more risk factors we can lower through good health habits are **high blood pressure** and high levels of **cholesterol**.

High Blood Pressure. Each time the heart beats, blood is being pushed against the walls of the arteries. The measure of the force of blood against artery walls is called ***blood pressure***. If the arteries become hardened or filled with fatty substances, their passageways will narrow. In these cases blood will back up and put dangerous pressure on the heart. The heart will strain to push blood through the narrow walls of the arteries. This condition is called *high blood pressure*. It is also called *hypertension*.

Some of us may inherit high blood pressure from our parents. However, everyone can practice healthy habits that will help us lower high blood pressure. One "heart smart" way to protect against or lower high blood pressure is to do regular cardiovascular exercise. Another good way to avoid or lower high blood pressure is to eat a diet low in salt and fat.

High Cholesterol Levels. *Cholesterol* is a fat that is made in our bodies. Cholesterol also comes from foods. Our tissues need a certain amount of cholesterol to stay healthy. However, if we take in or produce too much cholesterol in our bodies, the extra cholesterol will clog the passageway in arteries. High levels of cholesterol can lead to coronary artery disease.

High levels of cholesterol, like high blood pressure, can be inherited. Everyone, however, can practice healthy habits to reduce cholesterol levels. Not smoking and avoiding fatty foods are two "heart smart" ways to lower your cholesterol level. Regular cardiovascular exercise and maintaining the right body composition are also good ways to control cholesterol.

Risk Factors You Cannot Control: Age; Heredity; and Sex

Some risk factors are not influenced by lifestyle. We cannot control or reduce these factors. Therefore, it is especially important that we eliminate those risk factors we can.

> **Age.** The older you get, the more susceptible to a heart attack you become.
>
> **Heredity.** Heart disease and other cardiovascular disease in your family increase your chance of developing a heart disease.
>
> **Sex.** Males are much more susceptible than females to a heart attack.

Determining Your Cardiac Risk

Complete the chart Cardiac Risk Index on page 191. Follow the directions at the top of the page to measure your risk of having a heart attack or developing heart disease.

Risk Factor	Risks	Good Health Habits
High Blood Pressure	Increases the force of the blood being pushed against the walls of the arteries as it is pumped; blood pressure remains constantly higher than healthy range.	Regular cardiovascular exercise lowers blood pressure.
High Levels of Cholesterol	Increases fatty substances in blood that can block arteries and restrict blood flow; high levels contribute to artery disease and other forms of heart disease.	Regular exercise combined with a healthy, low-fat diet keeps cholesterol levels normal.
Cigarette Smoking	Number one risk factor for heart disease; more than doubles heart attack rate.	Regular and vigorous exercise increases likelihood of not smoking or quitting.
Diabetes	Increased body weight and unhealthy body composition can increase the body's insulin requirements.	Regular exercise helps to decrease a diabetic's insulin requirements.
Overweight/Obesity	Excess fat on the body increases likelihood of high blood pressure, high blood cholesterol, diabetes, and coronary artery disease.	Regular exercise helps to lose extra fat pounds and develop a healthy body composition.
Physical Inactivity	Increased incidence of coronary artery disease.	Regular exercise increases life expectancy, improves quality of life, promotes clearer arteries, and reduces risk of heart disease.
Stress and Tension	Often increases blood pressure and other risk factors that contribute to heart disease.	Regular exercise relieves stress and tension by relaxing muscles.

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Cardiovascular Fitness

Risk of Heart Attack

In each of the eight categories in the chart below, choose one box that describes you. Record your score in the space provided. Add the numbers from each box to find your total score. Refer to the scale at the bottom of the chart to determine your risk of heart attack.

Cardiac Risk Index

Risk Factor	Index						Score
1. Age	10 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	
	1	2	3	4	6	8	
2. Heredity	No known history	1 relative over 60 with cardiovascular disease	2 relatives over 60 with cardiovascular disease	1 relative under 60 with cardiovascular disease	2 relatives under 60 with cardiovascular disease	3 relatives under 60 with cardiovascular disease	
	1	2	3	4	6	8	
3. Weight	5 lbs or more below standard weight	-5 to +5 lbs standard weight	6-20 lbs overweight	21-35 lbs overweight	36-50 lbs overweight	51-65 lbs overweight	
	1	1	2	3	5	7	
4. Tobacco smoking	Nonuser	Cigar and/or pipe	10 cigarettes or less a day	20 cigarettes a day	30 cigarettes a day	40 cigarettes or more a day	
	0	1	2	4	6	10	
5. Exercise	Intensive occupational & recreational exertion	Moderate occupational & recreational exertion	Sedentary work & intensive recreational exertion	Sedentary work & moderate recreational exertion	Sedentary work & light recreational exertion	Complete lack of all exercise	
	1	2	3	5	6	8	
6. Cholesterol, or if unknown, % fat in diet	Cholesterol below 180 mg% No animal or solid fat in diet	Cholesterol below 181-205 mg% 10% animal or solid fat in diet	Cholesterol below 206-230 mg% 20% animal or solid fat in diet	Cholesterol below 231-255 mg% 30% animal or solid fat in diet	Cholesterol below 256-280 mg% 40% animal or solid fat in diet	Cholesterol below 281-330 mg% 50% animal or solid fat in diet	
	1	2	3	4	5	7	
7. Blood pressure	100 upper reading	120 upper reading	140 upper reading	160 upper reading	180 upper reading	Upper reading 200 or more	
	1	2	3	4	6	8	
8. Gender	Female under 40	Female 40-50	Female over 50	Male	Stocky male	Bald stocky male	
	1	2	3	5	6	7	
						Total Score	

Your risk of HEART ATTACK:

6—11	Well below average
12—17	Below average
18—24	Average
25—31	Moderate
32—40	Dangerous
41—62	Urgent DANGER—Make lifestyle changes to reduce your score!

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Your Heart Rate: A Measurement of Your Cardiovascular Fitness

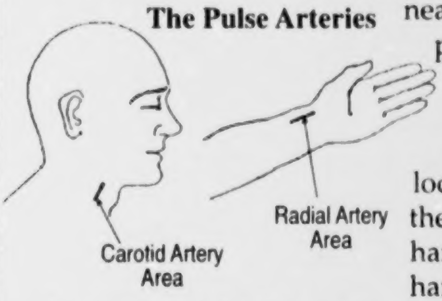
Your heart beats at different rates depending upon what activity you are doing. Many measurements of cardiovascular fitness are based on your heart rate. Your *heart rate* is the number of times your heart beats, or pumps, per minute. There are two important heart rates you should measure to monitor your cardiovascular fitness. One important heart rate is your **recovery heart rate**, or your heart rate shortly after exercise. You will read about how to measure your *recovery heart rate* later in this unit.

Another important heart rate is your *resting heart rate*, or the rate at which your heart beats per minute while you are at total rest.

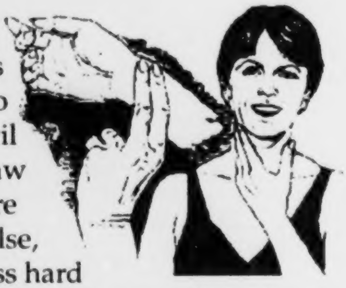
Taking Your Pulse: Counting Your Heart Beats

Your **pulse** is a wave of slight pressure which can be felt in certain arteries near your skin. Your pulse is caused by the pressure as each heart beat forces blood against the artery wall. You can measure your heart rate by taking your pulse at the **radial artery**. The radial artery is located on the underside of your wrist. Place the tips of the first two fingers of your right hand just below the wrist bone of your left hand. Then slowly slide your fingertips until they are straight down from your thumb. You should feel a rhythmic beat just below the skin. This beat from your radial pulse is a true measure of your heart beat.

The Pulse Arteries



You can also take your pulse at your ***carotid artery***. To find your carotid artery, place the tips of your first two fingers on either groove next to your Adam's apple. Then slide your fingers until they are about one inch below the top of your jaw bone. Press gently until you feel regular pressure just below the skin. This beat is your carotid pulse, another measure of your heart beat. Do not press hard or on both sides of the neck at the same time. Doing this can reduce the blood flow and cause lightheadedness and an inaccurate reading.

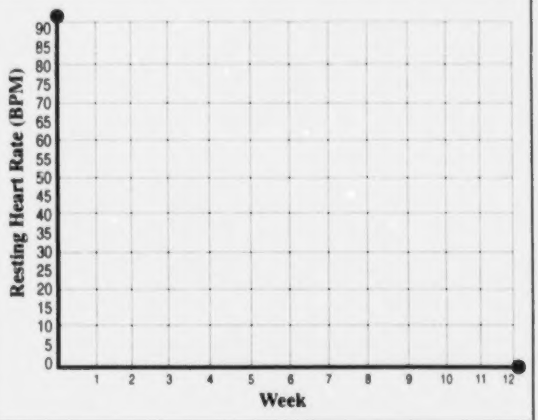


Resting Heart Rate: Measuring Heart Beats While at Rest

One important measure of the condition of your heart is your *resting heart rate*. The resting heart rate is the number of times your heart beats in a minute while at rest. It is best to take your resting heart rate in the morning before getting out of bed.

Heart Rate Monitoring Activity

Week	Date	Time	Resting Heart Rate (BPM)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			



The average resting heart rate is 78 to 84 beats per minute for an adult female. It is 72 to 78 beats per minute for an adult male. The resting heart rate of an aerobically fit person is probably lower than the average resting heart rate. A low resting heart rate is desirable and indicates a strong and efficient heart. A strong heart pumps more blood with each beat, leaving more rest time in between beats. This means more energy for you!

You can measure your progress in a cardiovascular fitness program by occasionally recording your resting heart rate. You may notice a decrease of 10 to 25 beats per minute in your resting heart rate after a few months in a cardiovascular fitness program.

Monitoring Your Resting Heart Rate (RHR)

Use the chart to the right to record your resting heart rate. Measure your resting heart rate once a week. **NOTE:** a restless night of sleep, smoking, alcohol, stress, caffeine, a recent meal, or certain medications can increase your resting heart rate.

1. The best time to take your resting heart rate is before you get out of bed in the morning. **Note:** You may also measure your resting heart rate when you are relaxed. Be sure you have not done any physical activity for at least 30 minutes, and have not eaten for several hours.
2. Find your pulse at either your radial (wrist) artery or your carotid (neck) artery.
3. Use your index and middle finger of your right hand to find your pulse. Use the fingertips, and never use your thumb since it has a pulse of its own.
4. Apply a slight but steady pressure with your fingertips until you feel a pulse.
5. When measuring your resting heart rate, count your heart beats for 30 seconds and double it. You may need to measure your pulse more than once to get an accurate reading. If you lose the count of your pulse, begin again. Be patient; it takes practice!
6. Plot your BPM on the graph on page 193.

Date	Current Resting Heart Rate	Measured for :	
		30 Seconds	1 Minute

Improving Cardiovascular Fitness Using Training Principles: Overload; Progression; and Specificity

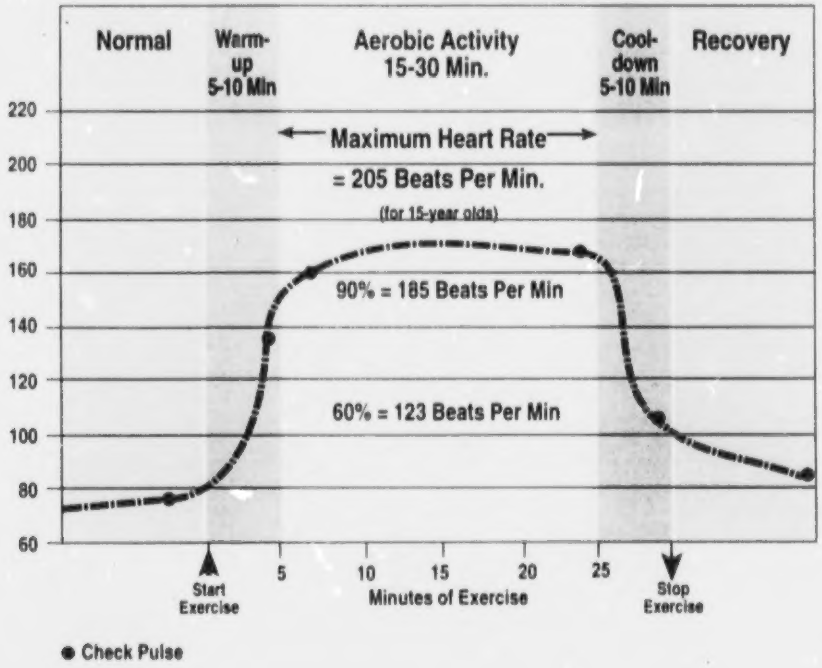
The Principle of Overload: Frequency; Intensity; and Time (F.I.T.)

You can improve your cardiovascular fitness by regularly making your heart work harder than it normally does. The working heart grows stronger. A stronger heart can pump more blood with each beat than a weaker heart. Use the *three principles of overload* to gradually increase the work your heart does during aerobic exercise.

(F) Frequency. You must workout at least three days per week to develop cardiovascular fitness. Begin an exercise program with three workouts per week. Add workouts to your week after your body has adjusted. To improve your cardiovascular fitness, you must do a minimum of four aerobic workouts per week. Eventually, you will be able to exercise aerobically on a daily basis.

(I) Intensity. You can measure the intensity of your aerobic exercise by checking your heart rate. During exercise, your heart should beat between the 60 percent and 90 percent range of your **maximum heart rate**. This range is also called your *target heart rate zone (THRZ)*. Exercising at a lower heart rate will not improve your cardiovascular fitness. Exercising at a higher rate puts a dangerous strain on your heart muscle. If you are starting an aerobic program, stay near 60 percent of your target heart rate. Gradually increase to higher ranges as your body adapts. (Refer to *Target Heart Rate Zone* section pp. 196-198.)

An Aerobic Exercise Workout



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(T) Time. Work your heart in the target heart rate zone for at least 15 minutes. If you are beginning a fitness program, start with 15 minutes of low intensity aerobic exercise. As your fitness improves, lengthen your workout time to 30 minutes. Over time, you can lengthen it to 60 minutes.

The Principle of Progression: Continually Improving Cardiovascular Fitness

At first your workout will work your body beyond its normal level. However, your heart will eventually adjust to your workout. If you continue to workout for the same length of time and number of times per week, you will *maintain* your cardiovascular fitness. To *improve* your fitness level, you must *overload* your body, or increase your workout. Increasing the difficulty of your workout is called *progression*.

Gradually lengthening the time you exercise from a minimum of 15 minutes to a maximum of 60 minutes is a good way to increase your fitness level. After your body adapts to 60 minutes of exercise, add another exercise session per week. Each time you increase the number of exercise, decrease the time of each session. As your body adjusts to these additional sessions, gradually add more time to each session. Remember to monitor your heart rate and resting heart rate as you become more fit. From time to time recalculate your heart rate zone and resting heart rate.

Principle of Specificity: Training to Reach Certain Goals

If you want to improve a specific area of your body, you must work on that specific area. This idea is called the *principle of specificity. For example,* to improve your cardiovascular fitness, you need to do aerobic exercises. Aerobic exercises are best for improving the fitness of the heart and lungs. To tone the stomach muscles, or abdominal muscles, do sit-ups and crunches to work these particular muscles.

Target Heart Rate Zone: Determining Exercise Level

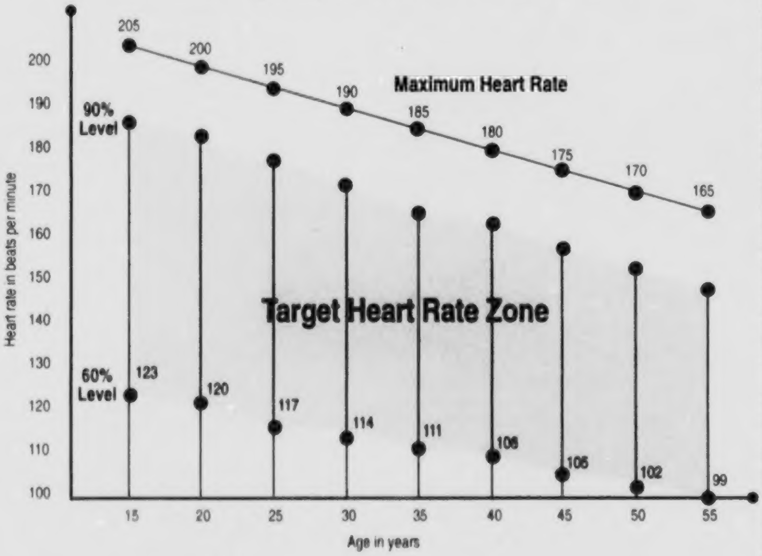
To improve your cardiovascular fitness you need to work your heart within the *target heart rate zone*. Your target heart rate zone is between 60 percent and 90 percent of your *maximum* heart rate. Approximate your maximum heart rate by subtracting your age from 220. Design your workouts to reach the THRZ, but do not exercise beyond this zone. Exercising at your maximum heart rate *can be extremely dangerous.*

Exercising in the target heart rate zone will bring about a **training effect**. *Training effects* are the positive physical fitness changes in the body that occur as a result of exercise. A lower resting heart rate is one possible example of a training effect gained from cardiovascular exercise. Greater endurance is another example of a training effect.

The target heart rate zone helps you determine whether to increase or decrease your aerobic exercise.

When beginning an aerobics program, aim your workout towards the lower range of your target zone (60 percent). As you get into better shape, slowly build up to the higher range of your target zone (90 percent).

Average Target Heart Rate Zone



Another way to monitor your exercise intensity is to check yourself with the *talk test*. You should be able to talk during exercising. If you are breathing deeply but not gasping for air, you are probably exercising aerobically. For example, when walking briskly or jogging you should be able to talk comfortably without getting out of breath. However, if you are able to sing or shout, then you are not exercising hard enough.

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Calculating Target Heart Rate Zone (THRZ)

Purpose: To identify your target heart rate zone to achieve a *training effect.*

Procedure: To figure your individual THRZ, you need to know your resting heart rate. Study the example provided and then follow each step to determine your own THRZ.

The Steps	The Examples		The THRZ Formula
1. First, determine your **maximum heart rate (MHR)** by subtracting your age from **220**.	220 − 17 203		**220 − Age = MHR**
2. Next, subtract your current **resting heart rate (RHR)** from your **MHR**.	203 − 70 133		**MHR − RHR = HR Reserve**
3. Multiply both the **lower limit (.60)** & the **upper limit (.90)** by the answer in #2.	133 x .60 79.8	133 x .90 119.7	**HR Reserve x .60 = Lower limit** **HR Reserve x .90 = Upper limit**
4. Add your **RHR** to both **lower & upper limits**. Round off your answers to find your **THRZ**.	**79.8** + 70.0 **149.8**	**119.7** + 70.0 **189.7**	**RHR x Lower limit = Lower zone** **RHR x Upper limit = Upper zone**

Rounded off, the target heart rate zone for the individual in the chart above is 150 – 190 beats per minute.

What is your individual target heart rate zone? ________________

Is your THRZ higher or lower than the average for your age that appears on the graph?

____

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Monitoring Heart Rate during Exercise

Use your target heart rate zone to check the intensity of your workouts. To see if you are in your THRZ, take your pulse immediately after you stop exercising. Quickly find your pulse either at your radial (wrist) artery or your carotid (neck) artery. Count your pulse for 10 seconds. Multiply the number of beats by six to determine your heart beats per minute. If your pulse falls within your target zone, your intensity is just right. If your heart rate is higher than the recommended upper range, reduce the intensity of your exercise. If your heart rate is lower than the recommended lower range, increase the intensity of your exercise.

Experts recommend that you take your heart rate three different times during an exercise session. First, take a warm-up heart rate, or a pulse taken before actual exercise.

Second, take a workout heart rate just after you finish the hardest part of your aerobic exercise. (Remember: Your exercising heart rate should be in your THRZ, somewhere between 60 percent and 90 percent of your maximum heart rate.)

Finally, take your heart rate after your **cool-down**. This rate will show whether you have completely recovered from your workout.

Recovery Heart Rate: How Quickly the Heart Returns to Normal

Recovery heart rate is the heart rate taken shortly after exercise. This measure can help indicate if your workout was too strenuous for your fitness level.

After five minutes of cool-down, your heart rate should be no more than 120 beats per minute. After 10 minutes, your heart rate should be 100 beats or less per minute. If your heart rate fails to drop to those levels, then perhaps you did not complete your cool-down. If your cool-down was complete, then perhaps your workout was too hard and needs to be easier.

Heart Rate Response to Exercise

Purpose: To measure how your heart rate responds to a variety of situations. To keep track of your actual heart rate before, during, and after a workout.

Materials: stopwatch, jump rope, jogging track or area

Procedure: Measure and record your heart rate in each of the situations and exercises listed below. Measure your heart rate *during* each activity in which you do *not* move. Measure your heart rate *immediately after* each exercise. Count your pulse for 10 seconds. Then multiply the number of beats counted by six. The product is your heart rate or beats per minute (BPM). Take your pulse either at your carotid (neck) artery or at your radial (wrist) artery. Record your BPM in the spaces provided.

	Heart Rate (BPM) 10-second pulse count x 6
1. Your RHR	
2. Sitting relaxed	
3. Standing	
4. Warm-up & stretch (3 minutes)	
5. Jumping Jacks (50)	
6. Jogging in place (1 minute)	
7. Jump rope (1 minute)	
8. Jog (440 yards)	
9. Walk slowly & stretch (5 minutes)	
10. Relax & stretch (5 minutes)	

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Answer the following questions about your heart rate during these situations and exercises. Write your answer on the lines provided.

1. Was there any difference between your resting heart rate and your BPM while sitting?

   ____

   Explain: ____________________________________

   ____

   ____

   ____

2. Did standing up increase your BPM? __________________

   Why or why not? ______________________________

   ____

   ____

   ____

3. How did the warm-up and stretching affect your BPM? ________

   ____

   ____

   Did the warm-up seem to gradually increase your BPM? ________

4. What was your BPM after performing 50 jumping jacks? ________

   Is that what you would expect it to be? __________________

Explain: ______________________________

____

____

5. Did jogging in place for a minute elevate your BPM to the training heart rate zone?

____

Why or why not? ______________________________

____

____

6. What was your BPM after jumping rope? ______________

Did this increase your BPM to the target heart rate zone? ________

7. Did moving your body from one place to another, such as in jogging, affect your heart rate differently than standing in place, such as in doing jumping jacks?

____

Explain: ______________________________

____

____

8. What was your five-minute recovery heart rate? ______________

your 10-minute recovery heart rate? ______________

Did your heart rate come down to at least 120 BPM after five minutes?

____

Why or why not? ______________________________

____

Did your heart rate come down to at least 100 BPM after 10 minutes?

____

Why or why not? ______________________________

____

____

Determining Your Level of Aerobic Fitness

Many tests designed to measure cardiovascular fitness require special equipment and trained personnel. One such test performed in a doctor's office or hospital is called a *stress test*. A stress test measures your heart rate during and after strenuous exercise on a treadmill or stationary bicycle. A doctor then uses the results to evaluate your cardiovascular system.

However, there are easier ways to measure your level of cardiovascular fitness. These methods include distance runs and step tests.

One-Mile Run

Purpose: To measure cardiovascular fitness (heart and lung endurance) by walking, jogging, or running a mile as fast as you can.

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Materials: stopwatch, quarter-mile track or marked off jogging path

Procedures and Guidelines:

Note: You should only take this test *after* you have been exercising regularly for several weeks.

1. Warm up with a brisk walk or easy jog. Gently stretch all your major muscle groups. Drink water before beginning your test.
2. Begin the test at a pace, or speed, that you can maintain throughout the mile. Avoid starting out too fast and having to stop or slow down. Walking is permitted, but try to finish the mile in the shortest amount of time possible.
3. Do the best you can for your own current level of cardiovascular fitness. Avoid competing with others.
4. At the completion of the mile run, remember your time in minutes and seconds.
5. Continue jogging slowly or walking for an additional lap (quarter mile) to cool down. Stretch all of your major muscle groups after you have cooled down to reduce muscle soreness.
6. Record your score on the mile run in the chart on page 205.

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One-Mile Run Ratings

(minutes:seconds)

Males	Females	Fitness Category
5:41 or less	6:54 or less	Excellent
5:42 - 6:36	6:55 - 9:03	Good
6:37 - 7:25	9:04 - 9:47	Fair
7:26 - 8:26	9:48 - 11:28	Poor

Test Date	Time	Rating

1. What was your time on your mile run? ____________________
2. What was your rating on your mile run? ____________________
3. Did you perform better or worse than you expected? __________

Three-Minute Step Test

Purpose: To measure the heart rate as an indicator of your level of cardiovascular fitness.

Materials: a 12-inch high step bench, metronome for accurate pacing, a watch or timer, partner

Procedures and Guidelines:

1. The step test is done by stepping up and down off a 12-inch step bench. Continue for three minutes to a rhythm of 96 steps per minute. A *step* counts as stepping on to the bench or stepping off the bench.
2. Warm up and stretch the major muscle groups before the test. Practice stepping up and down off the bench for a few cycles as a warm-up. Step to a four-beat cycle—up, up, down, down.

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3. You can choose which foot you will lead with during the test. Half-way through the test you may want to switch the lead foot.

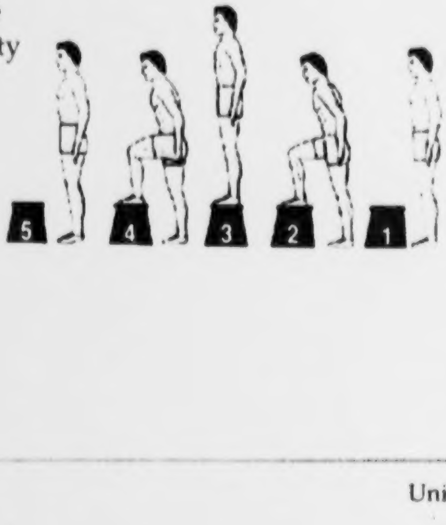
4. When given the signal to begin, start stepping up and down off the step bench. Make sure to contact the bench with your whole foot. Keep your arms down by your sides and your body upright during the three-minute test. Do not talk during the test.

5. After three minutes, sit down immediately on the step and begin counting your pulse. Find your pulse at your carotid (neck) artery and count the beats for one minute. Your partner will count your pulse at the radial (wrist) artery at the same time. It may help to close your eyes and take deep breaths to concentrate on the pulse rate.

6. Compare your one-minute recovery heart rate withyour partner's count of your heart rate. Average them together for your answer if you both believe you took the pulse correctly. If one of you did not find the pulse or take it correctly, disregard those readings.

7. Record the one-minute pulse rate in the chart on page 207 and refer to the ratings given.

Note: A person's heart rate after exercise reflects the cardiovascular system's ability to recover from exercise.



Cardiovascular Fitness

Three-Minute Step Test Ratings

Males	Females	Fitness Category
< 79	< 85	**Excellent**
79 - 89	85 - 98	**Good**
90 - 99	99 - 108	**Above Average**
100 - 105	109 - 117	**Average**
106 - 116	118 - 126	**Below Average**
117 - 128	127 - 140	**Poor**
> 128	> 140	**Very Poor**

Test Date	Pulse Rate	Rating

1. How did you feel after the three-minute step test? ______________

____

2. What was your one-minute recovery heart rate? ______________

3. Did your heart rate seem to lower quickly? ______________

Guidelines for Safe Aerobic Exercise: Smart Exercise

Get medical clearance. Make sure you are in good health prior to beginning an aerobic exercise program. If you have a pre-existing medical condition, get medical clearance from a physician before exercising.

Warm up before exercise. A warm-up is the beginning phase of exercise. It should include mild exercise and static stretching. The warm-up prepares the heart and lungs for more vigorous exercise. It also increases the blood flow to your working muscles.

Wear loose, comfortable, layered clothing. Dress in layers of clothing for outdoor workouts. You can then peel off clothing as you warm up. Wear cotton or other porous materials that will allow sweat to evaporate.

Wear appropriate footwear. Shoes should be comfortable and not too small. Do not lace them too tightly. They should have good support and cushion.

Exercise on soft surfaces. Try to exercise on soft, level surfaces such as a level grass field, a dirt path, nature trail, or running track. Hard, uneven surfaces such as cement or rough fields are more likely to cause injuries.

Exercise in a well-ventilated room. Try to exercise in a room that is not too hot or too cold.

Be cautious in hot, humid environments. Adjust your exercise intensity and duration in hot, humid weather or poorly ventilated rooms.

Drink water. Drink water before, during, and after exercise to prevent dehydration and heat illness.

Build your fitness gradually. It takes times to get fit! Build up your level of activity gradually over the weeks. Be careful not to extend yourself too much right away. Many enthusiastic beginners have been side-tracked injuring themselves. Be patient!

Listen to your body. Pay attention to early warning pains. Too much exercise can cause injuries to your joints, feet, ankles, and legs.

Check your intensity. Take your pulse before exercise, immediately after the most intense portion, and after the cool-down.

Be aware of signs of heat stroke. Early signs include feeling dizzy, weak, lightheaded, excessively tired. Seek medical attention if you stop sweating or your body temperature becomes dangerously high.

Jog with correct technique. If you walk, jog, or run, land on your heels. Then roll onto the balls of your feet. This will reduce the strain on your feet and lower legs.

Avoid wearing rubberized or plastic exercise suits. Such clothing will not help you lose weight any faster by making you sweat more. The weight lost will quickly be replaced as soon as you begin drinking fluids again. This type of clothing can cause dangerously high body temperature, possibly resulting in heat stroke.

Always cool down. A cool-down is the tapering off period after exercise that helps the body to *gradually* return to a resting state. The cool-down helps the body re-adjust to less physical demands. It also helps prevent blood from pooling in the muscles that have been active. The first part of the cool-down should include walking or other light activity. The last part should include static stretching.

Selecting Your Cardiovascular Program

Exercise that improves the condition of your heart and lungs must be brisk, sustained, and regular. Excellent cardiovascular programs include walking, jogging, swimming, bicycling, aerobics classes, rowing, and cross-country skiing. For an activity to be considered aerobic it must raise the heart rate and breathing rate. It must be performed continuously for at least 15 minutes. And it must be done at least three times per week.

Considerations Before Choosing an Activity: A Checklist

How physically fit are you? Before choosing an activity, determine your health needs. What are your strengths and what are your weaknesses? Looking back to the fitness assessments will help you see the areas of fitness you should focus on most.

Do you like to exercise alone or with other people? Many people like to be alone during physical activity. Others like to exercise with a group. Some people are more likely to stick to their exercise program if they exercise with others. You need to decide what type of person you are and select an activity that fits.

Do you prefer to exercise outdoors or indoors? Outdoor activities offer a variety of scenery and weather, which helps to prevent boredom. Indoor activities, such as stationary cycling, bench stepping, or jumping rope, can always be relied upon even if the weather can't be!

Do you like sports and competition? Your skill level can influence your success and participation in sports activities. If you enjoy competition, find a variety of sports activities in which you can participate. Remember: Exercise at your own level. Don't let the excitement of competition push you to over-extend yourself and risk injury.

Are you willing to purchase sports/fitness equipment or a membership to a health facility? Some individuals need an instructor or coach to motivate them. There are many inexpensive public recreation facilities and physical activity classes. Private clubs cost more but may fit your needs. An activity such as fitness walking only requires buying a good pair of walking shoes.

Aerobic Activities

The following programs will help you plan an aerobic exercise program that increases safely week by week. Remember: Do not begin a program at a level that is too difficult for your present fitness condition. Start slow and work up to a more intense level. You have a lifetime to improve your fitness level.

Fitness Walking: An Exercise for Everyone

Walking is a great cardiovascular exercise that can be done by nearly everyone anywhere! Walking is an everyday activity that you can make into a regular exercise program. Walking is a good way to develop and maintain fitness.

Technique: Stroll easily for the first five minutes of your walk to warm up your muscles and reduce your chance of injury. Stretch the muscles of the legs with static stretching. As you walk keep your head up, eyes forward, and body upright. Gently contract the abdominal muscles, holding them in as you walk. Land on your heel, and roll heel to toe. Let your stride length come naturally. Increase your pace gradually. As you pick up the pace, thrust harder with the legs. Let your elbows bend naturally (up to 90 degrees) as you swing your arms faster. Breathe deeply and naturally. Cool down by strolling leisurely. Finish your cool-down by static stretching the major muscles of the legs.

Place: Find a place where you can walk all the time. If outdoors, choose a smooth, soft surface. If weather prevents outdoor walking, find an indoor track, recreation center, or even a shopping mall.

Attire: A good pair of walking shoes is important. They should fit comfortably and have a roomy toebox. They should be light yet have a supportive arch.

Walking Calories Used Per Hour

Speed	75 lbs	100 lbs	150 lbs
2.0 mph	125	160	240
3.0 mph	175	210	320
4.5 mph	245	295	440
5.5 mph	365	440	740
7.0 mph	510	610	920

For example, a 100-pound person walking three mph should use the following formula: number of calories per hour (210) x number of hours (1/2) = (105) calories.

10-Week Walking Program

Week	Distance (miles)	Time Goal (minutes)		Frequency Per Week
		Girls	Boys	
1	•	20:00	20:00	3
2	•	25:00	25:00	3
3	•	30:00	30:00	4
4	•	30:00	30:00	4
5	2.0	32:00	32:00	4
6	2.0	32:00	30:00	4
7	2.5	41:00	38:00	4
8	2.5	39:00	37:00	4
9	3.0	47:00	45:00	4
10	3.0	< 45:00	< 43:00	4

During the first four weeks, walk continuously but do not worry about distance covered.

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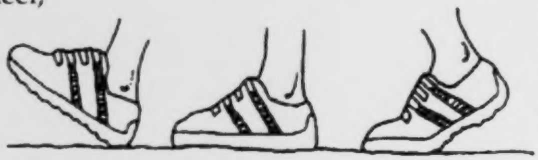
Jogging: An Exercise to Run for

Jogging is a great aerobic exercise that requires very little skill or expensive athletic equipment. You can run alone, with someone, or with a group of people. You can run year round, indoors or outdoors.

Technique: Jogging can be done by alternately walking and running at a slow to moderate pace. Jogging can also be done by running at a slow, even pace. Warm up by walking or with some light jogging and then stretch the leg muscles. When jogging keep your head up and back straight. Elbows should be bent and held slightly away from the body. Land on the heel, then rock forward onto the ball of the foot. Avoid landing on the balls of the feet. This places too much strain on the lower legs. Slowly cool down by walking for about three minutes. Finish cooling down by doing static stretching for two minutes.



Place: Find a place where you can run all the time. For outdoor running, find a course with a smooth, soft surface. Fitness trails are often located in recreation parks and on school grounds. Fitness trails are established routes with exercise stations along the way. When the weather prevents outdoor running, run around a track at a health club or school.

Attire: Good running shoes are an important investment. Running shoes have thick, flexible soles that cushion the bottom of the foot. The soles also absorb shock of the rest of the body. This helps prevent injuries to the bones, ligaments, joints, and muscles.

Jogging Calories Used Per Hour

Activity	Speed	75 lbs	100 lbs	150 lbs
Jogging	5.5 mph	365	440	660
Jogging	7.0 mph	510	610	920
Running in place	0.0 mph	360	430	650
Running	10.0 mph	710	850	1280

For example, a 100-pound person running at 10 mph should use the following formula: number of calories per hour (610) x number of hours (1 [illegible]) = (425) calories.

10-Week Jogging Program Progression

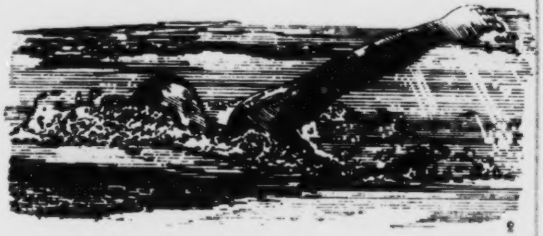
Week	Activity	Distance (miles)	Time Goal (minutes)		Frequency Per Week
			Girls	Boys	
1	walk	2.0	32:00	30:00	3
2	walk	3.0	48:00	45:00	3
3	walk/jog	2.0	26:00	24:00	4
4	walk/jog	2.0	24:00	22:00	4
5	jog	2.0	22:00	20:00	4
6	jog	2.0	20:00	18:00	4
7	jog	2.5	25:00	23:00	4
8	jog	2.5	23:00	21:00	4
9	jog	3.0	29:00	26:30	4
10	jog	3.0	< 27:00	< 24:00	4

Swimming: An Exercise with a Cushion

Swimming is one of the most popular sports activities in this country. Swimming has several advantages that are not found in other sports activities. Water cushions the body. There is less stress put on bones, joints, and muscles than in some dry-land sporting activities. Regular swimming tones and strengthens the major muscles of the body, including legs, arms, back, and waist. The resistance of the water is similar to exercising with weights.

Technique: Each swimming workout should begin with a five- to ten-minute warm-up. This can include flutter kicks, walking in the shallow end of the pool, or slow laps. Perform static stretches on the side of the pool after you warm up.

When starting out, begin with as many laps as you can, even if it's only one or two laps. As your body adjusts you can increase the number of laps gradually. Focus on building your distance rather than speed, even if that means resting occasionally. Include a variety of swimming strokes. Alternate the crawl, backstroke, or butterfly with the breaststroke and sidestroke.



End your workout with a cool-down. Slowly swim two laps to help reduce your heart rate. Perform static stretching at the side of the pool after your heart rate has decreased. Always wait at least an hour after a heavy meal before you swim.

Place: Some people choose to swim in open water, but doing so subjects you to nature's elements. Always make sure there are lifeguards present. Be sure to check with the marine patrol for information regarding weather, tides, depth, current, undergrowth, and other factors that could affect your swim. When swimming at a pool, observe the rules and policies on lap sharing and using kickboards and fins. Don't swim alone. There should always be a lifeguard or you should swim with a "buddy."

Attire: A good swimming suit is lightweight and made of nylon or a nylon blend. The suit should fit snugly to streamline your body, but still be comfortable.

Swimming Calories Used Per Hour				
Activity	**Yards Per Min**	**75 lbs**	**100 lbs**	**150 lbs**
Swimming per hr.	25	155	185	275
Swimming per hr.	50	270	325	500

For example, a 100-pound person swimming 50 yds./min. should use the following formula: number of calories per hour (325) x number of hours (1) = (325) calories.

10-Week Swimming Program

Week	Distance (yards)	Time Goal (minutes)		Frequency Per Week
		Girls	Boys	
1	400	15:00	14:00	3
2	400	13:00	12:00	3
3	500	15:00	14:00	4
4	500	13:00	12:00	4
5	600	18:00	17:00	4
6	600	16:00	15:00	4
7	700	19:00	18:00	4
8	800	21:00	20:00	4
9	900	23:00	22:00	4
10	1000	< 25:00	< 24:00	4

Bicycling: An Exercise That Takes You Places

Bicycling is a great way to keep fit and have fun. Bicycling is used for many different activities—shopping, getting to and from work or school, or just touring the trails on the weekends. Cycling can be done alone, with a partner, or with a group.

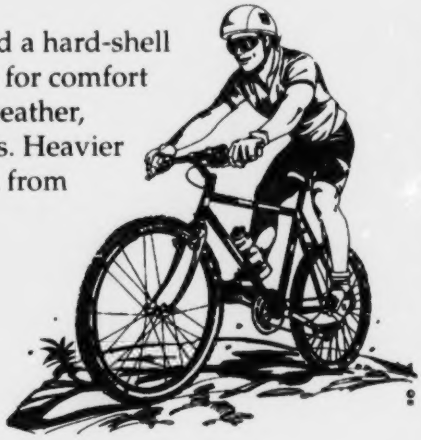
Technique: Before riding, make sure that your bicycle seat height is adjusted properly for you. Adjust the handle bars to a position which is comfortable for your riding style. A trained technician at a local bicycle store can help you adjust your bicycle.

Begin with a warm-up, which could consist of riding your bike slowly. After you warm up, perform static stretches on the major muscles of your legs.

Start your ride at a moderate pace so your leg muscles can adjust to the increased activity. Learn to handle your bike well before attempting difficult places such as heavy traffic or steep, winding roads. Be alert to holes or objects. Know the basics of bike safety. Pedaling needs to be steady, vigorous, and continuous to achieve real benefits. End your workout by slowing down gradually and stretching your leg muscles.

Place: Finding a regular place to ride helps you stick to your cycling program. Is there a scenic bike trail nearby that is away from automobiles? If you ride through city streets, take care to avoid dangerously busy intersections. Some cities now have special "bike traffic" lanes designated along major thoroughfares.

Attire: A sturdy, well-made bike and a hard-shell helmet are necessities. Dress for comfort and protection against the weather, chafing, and occasional spills. Heavier fabrics offer more protection from falls.



Cycling Calories Used Per Hour				
Activity	Speed	75 lbs	100 lbs	150 lbs
Bicycling	6.0 mph	155	185	275
Bicycling	12.0 mph	270	325	500

For example, a 150-pound person bicycling at 6 mph for 30 minutes should use the following formula: number of calories per hour (275) x number of hours (1 ⁄)= (137.5) calories.

10-Week Cycling Program

Week	Distance (miles)	Time Goal (minutes)		Frequency Per Week
		Girls	Boys	
1	5.0	30:00	28:00	3
2	5.0	28:00	25:00	3
3	5.0	27:00	23:00	4
4	6.0	34:00	26:00	4
5	6.0	30:00	24:00	4
6	7.0	38:00	30:00	4
7	7.0	35:00	28:00	4
8	8.0	48:00	35:00	4
9	8.0	44:00	34:00	4
10	8.0	< 40:00	< 32:00	4

Other Popular Aerobic Activities

Aerobic Dance. Aerobic dance is a fun, popular exercise program set to music. Aerobic classes design routines that incorporate combinations of dance steps and calisthenics. Aerobic classes can be either high-impact, low-impact, or a combination of both. High-impact aerobics includes bouncing, skipping, jumping, and running movements. Low-impact aerobics includes vigorous arm and upper-body movements with one foot kept in contact with the ground at all times.

Step Aerobics. Step training consists of stepping up and down on a platform (four inches to twelve inches in height) while performing creative step combinations to music. This low-impact, high-intensity athletic activity appeals to both men and women of all ages.

Water Aerobics. Water aerobics uses the basic moves of traditional aerobics classes. However, these movements are performed in the water. Many aquatic classes include water walking, deep-water running, and aquatic bench stepping. They may also include muscle-toning and strengthening exercises with props.

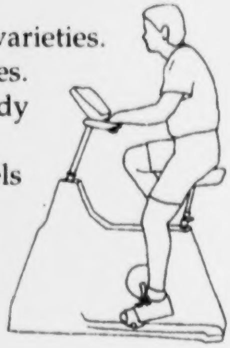
Rope Jumping. Rope jumping is a perfect all around aerobic exercise. It uses maximum energy and a minimum amount of space. Rope jumping can be simple and basic or made complex with advanced step patterns. It not only improves cardiovascular fitness, but develops coordination, speed, and agility as well.

Slide Training. Slide training is a new form of aerobic and anaerobic conditioning using lateral movements. It is necessary to have a specially designed slide board that allows you to slide in a side-to-side motion similar to speed skating.

In-Line Skating. In-line skating, often referred to as *roller blading,* is a fun activity that can be done almost anywhere. It involves wearing snow ski-type boots that have a row of three to five wheels underneath. The most important skill in successful skating is to keep your balance as you push yourself forward. Learning to stop is another tricky skill. The side-to-side motion used to push forward gives your large muscle groups in the lower body a great cardiovascular and muscle-toning workout!

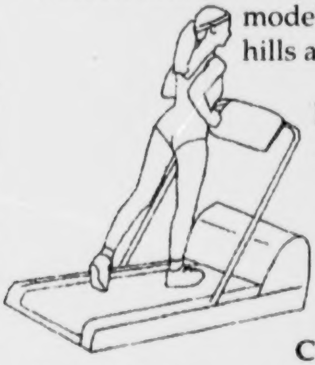
Cardiovascular Machines

Steppers. High-tech steppers have become one of the most popular aerobic exercise machines for home and gym use. These machines work the lower body's large muscle groups. They give your heart and lungs an excellent workout. Steppers are much safer than running stairs because they reduce impact stress to your joints. Better models have a readout monitor showing your time, speed, steps climbed, and calories burned. These models also let you select pre-designed programs.



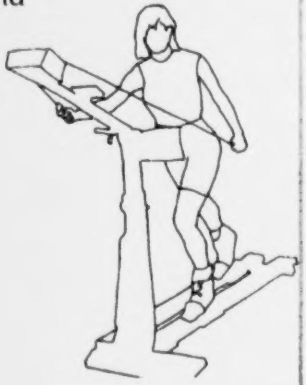
Stationary Bicycles. Stationary bicycles come in several varieties. Some of these bikes are upright and similar to outdoor bikes. And some stationary bikes work your upper and lower body at the same time. Riding a stationary bike is a low-impact aerobic activity. Stationary bikes can be set at different levels of resistance to fit your needs. You can develop excellent fitness by riding a stationary bike. Better models include a readout of elapsed time, speed, and distance. Models may even include a readout of total calories burned and your heart rate.

Treadmills. Treadmills, also known as *running machines*, offer fitness walkers and runners a chance to tackle difficult slopes. Many of the better models can be programmed to change the difficulty of the hills automatically.



Rowers. Rowers simulate the workout of being on a crew (rowing) team. Rowing provides an excellent non-impact workout for nearly the entire body! Many models monitor your speed, strokes per minute, elapsed time, and total calories burned.

Cross-Country Ski Simulators. You won't enjoy the beautiful snowy mountains, but cross-country ski machines are a good way to exercise all the muscles in your upper and lower body. It takes some time to master the coordination of using a cross-country skier, but the effort is worth it! Cross-country skiing uses a great amount of body mass during the exercise, which means more energy and calories are expended. Quality models let you adjust the level of difficulty. They also have a readout of elapsed time, distance, calories burned, and heart rate.



Cardiovascular Fitness

Summary

Exercising your heart improves your health and wellness more than any other type of exercise. Having a fit and healthy heart improves your energy level, burns off body fat, and helps you to relax. A fit heart also reduces your risk for heart disease and improves your quality of life.

Cardiovascular fitness, or the body's ability to deliver oxygen to working muscles, is basic to all fitness programs.

The cardiovascular system, also referred to as the *circulatory system*, includes your heart, blood vessels, and blood. It is this system that circulates oxygen-rich blood to the muscles throughout your body. Your heart is the muscle that continuously pumps blood. It is the most important muscle in your body. The body cannot survive for long once the heart stops beating.

Blood passes through the lungs and picks up oxygen. This oxygen-rich blood then enters the left side of the heart. This side of the heart pumps it out through a large blood vessel, the *aorta*. The blood then continues through the smaller blood vessels called *arteries* to all parts of the body. As the blood delivers oxygen to the muscles, it picks up waste. This waste-filled blood flows to the right side of the heart. The heart then pumps this oxygen-empty blood to the lungs, where it exchanges its waste for oxygen. The blood then returns to the left side of the heart and repeats its circular route.

A fit cardiovascular system efficiently circulates blood through the body. Having a strong cardiovascular system helps you feel better, look better, and reduces your risk of heart disease. Staying fit helps control *risk factors* for heart disease such as *high blood pressure* and high *cholesterol*. Not smoking, staying at the proper body weight, reducing stress, and being physically active all help reduce your risk of heart disease and keep you healthy.

Aerobic exercises are the best types of activities to aid cardiovascular fitness. Aerobic exercises are continuous activities that use the large muscle groups. They create an increased demand for oxygen. The increased need for oxygen-rich blood raises your *heart rate*. There are many ways to exercise your heart. Walking, jogging, swimming, bicycling, aerobics classes, in-line skating, and cross-country skiing are all *aerobic* exercises. Aerobic exercise improves your body's ability to use oxygen.

By monitoring your *pulse* when you exercise, you can be sure you are working in the *target heart rate zone*. The target heart rate zone is 60 percent to 90 percent of your *maximum heart rate*. Exercising in this zone will develop your aerobic fitness.

You will notice a drop in your resting heart rate as your fitness level improves. You will find yourself recovering from exercise more quickly. You will also find that you are able to do more work with less effort.

The lifestyle you lead today will affect your health in future years. Treat your heart and body properly and you can be rewarded with good health! Regular aerobic exercise can lengthen your life and also improve the quality of your life. Have a healthy heart!

Fitness Career Opportunity!

The Aerobics Instructor

Aerobics instructors are responsible for developing and leading safe exercise routines and aerobic classes at fitness centers or other health facilities, municipal recreation centers, colleges, and other school settings. They have basic knowledge in exercise physiology, anatomy, kinesiology, injury prevention, nutrition, and body composition.

Qualified aerobic instructors are certified by nationally recognized fitness organizations. They are also certified in cardiopulmonary resuscitation (CPR) and standard first aid.

The certification programs train aerobic instructors to evaluate exercise, give fitness assessments, choreograph and design exercise classes, and modify exercise for various populations.

There are many types of aerobic and fitness classes that require separate certifications or training for each of them. They include—Step Training, Low and High-Impact Aerobics, Aquatic Fitness, Youth Fitness, Adaptive Fitness, Prenatal Fitness, Senior Fitness, Fitness for the Overweight, Funk Aerobics, Boxing Aerobics, Interval or Circuit Training, Slide Training, and Muscle Endurance Training.

For more information regarding certification contact:

IDEA: The Association for Fitness Professionals
6190 Cornerstone Court East, Ste. 202
San Diego, CA 92121-4729
(619) 535-8979

The American Council on Exercise (ACE)
P.O. Box 910449
San Diego, CA 92191-0449
(800) 825-3636

Aerobics & Fitness Association of America (AFAA)
15250 Ventura Blvd., Suite 200
Sherman Oaks, CA 91403-3297
(800) 224-2322

The American College of Sports Medicine (ACSM)
P.O. Box 1440
Indianapolis, IN 46202-3233
(317) 637-9200

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Cardiovascular Fitness

Fill in the Blanks

Use the word list to complete the sentences below. Write the correct answer on each line.

chambers
blood vessels
capillaries
arteries
heart
carbon dioxide
valves
aorta
circulatory system
red
blue
ventricles
pump
veins
atria

1. The heart's function is to ____________________ blood throughout the entire cardiovascular system.
2. *Cardio* means ____________________ ; *vascular* means ____________________ .
3. Your heart has four ____________________ , two on each side.
4. The receiving chambers at the top of the heart are the right and left ____________________ .
5. The ____________________ are located at the bottom of the heart and act as muscular pumps.
6. ____________________ act as doors between the chambers of your heart.

7. The blood which comes from your lungs is bright

______________ because it has just received a fresh

supply of oxygen.

8. Blood that fills the right side of your heart is a dark,

______________ color because it has given up its oxygen

to the muscles.

9. In the lungs the blood releases a waste gas called

______________ .

10. The left ventricle contracts to pump blood to the rest of the body by

way of a large blood vessel called the ______________ .

11. The aorta transmits blood from the heart to all parts of the body

through blood vessels called ______________ .

12. The smallest blood vessels are called ______________ .

13. Blood vessels that carry blood back to the heart are called

______________ .

14. The heart, blood vessels, and blood all work together to form the

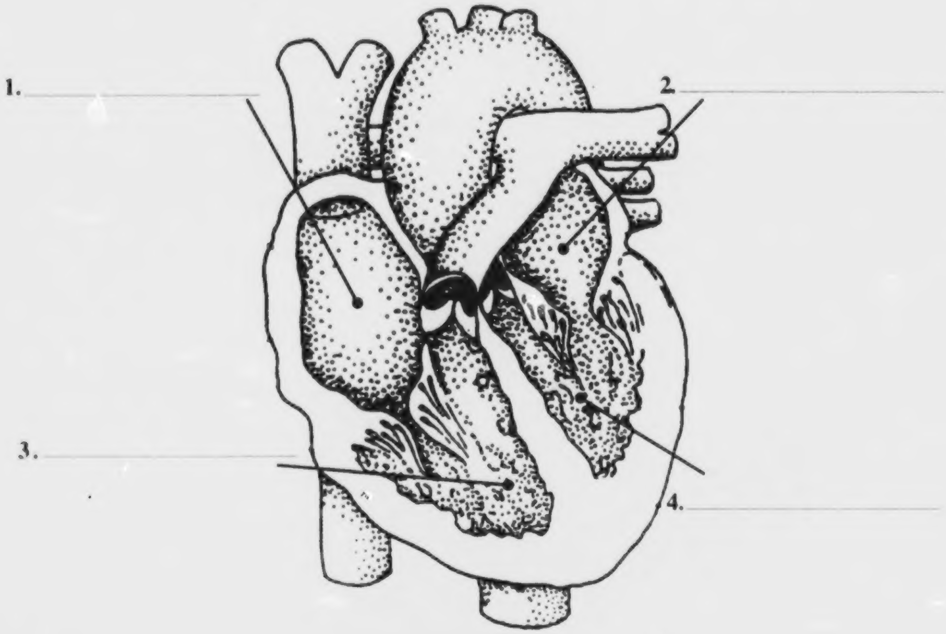
______________ .

Cardiovascular Fitness

Identification

Label each chamber of the heart. Write the correct term on each line.

The Heart



Cardiovascular Fitness

Multiple Choice

Circle the letter of the correct answer.

1. The most important muscle in your body is your __________ .

   a. aorta
   b. liver
   c. heart
   d. right lung

2. There are __________ chambers in your heart.

   a. 5
   b. 4
   c. 3
   d. 2

3. The blood vessels that carry blood *to* your heart are called __________ .

   a. arteries
   b. veins
   c. cells
   d. pulmonaries

4. The blood vessels that carry blood *away from* your heart are called __________ .

   a. veins
   b. cells
   c. arteries
   d. coronaries

5. The most important gas your blood carries to your body's muscles is __________ .

   a. carbon dioxide
   b. nitrogen
   c. oxygen
   d. carbon monoxide

Cardiovascular Fitness

6. The major function of your heart is to ____________ .

   a. pump bacteria out through your lungs
   b. pump nitrogen through your body
   c. keep germs out of your lungs
   d. pump blood through your body

7. The movement of blood from your heart through your body and back to your heart is called ____________ .

   a. digestion
   b. respiration
   c. gestation
   d. circulation

8. You will be able to tell when aerobic exercise has strengthened your heart because your resting heart rate will become ____________ .

   a. faster
   b. softer
   c. inconsistent
   d. slower

9. You can tell how fast your heart beats by ____________ .

   a. putting your hand on your stomach
   b. counting your breaths
   c. taking your pulse
   d. all of the above

10. Heart disease is any disease that affects the ____________ .

   a. heart
   b. upper body
   c. blood vessels
   d. both a. and c.

11. A healthy lifestyle while you are young will __________ your chance of having heart disease.

    a. increase
    b. decrease
    c. reverse
    d. not affect

12. People with heart disease often __________ .

    a. are overfat
    b. smoke cigarettes
    c. have hypertension
    d. one or all of the above

13. Conditions that increase the chance of heart disease are commonly called __________ .

    a. bad habits
    b. risk factors
    c. heart stoppers
    d. bad luck

14. You can easily and accurately take your pulse by pressing your __________ .

    a. carotid artery
    b. finger against your thumb
    c. radial artery
    d. both a. and c.

15. When taking your pulse, you shouldn't use your __________ because it has its own pulse.

    a. index finger
    b. ring finger
    c. thumb
    d. little finger

Cardiovascular Fitness

16. During exercise the cells of your muscles need extra nutrients and __________ .

    a. air
    b. oxygen
    c. carbon dioxide
    d. tissue

17. Your maximum heart rate is about 220 beats per minute minus your __________ .

    a. pulse rate
    b. oxygen ratio
    c. exercising time
    d. age

18. Your target heart rate zone is 60 percent to 90 percent of your __________ .

    a. exercise rate
    b. resting heart rate
    c. maximum heart rate
    d. heart and lung rate

19. In order to gain cardiovascular benefit, your heart should beat at its target heart rate while you are exercising for at least __________ minutes.

    a. five
    b. two
    c. six to ten
    d. fifteen

20. Of the following exercises, the *best* one to help you develop a stronger heart is __________ .

    a. volleyball
    b. long-distance running
    c. football
    d. weight lifting

Short Answer

Answer each question below with a short answer.

1. What is the beginning phase of any exercise that involves mild or light movements and gentle static stretching?

2. What type of activities do not use oxygen for energy and can only be performed for a short period of time?

3. What are two ways to test cardiovascular fitness?

4. What is the best indicator of the intensity of your workout?

5. What is the leading cause of death in the United States?

6. What is a fat-like substance found only in animal tissue that can clog or narrow arteries?

7. Why is it dangerous to exercise in a rubber or plastic suit?

Cardiovascular Fitness

8. What are some of the benefits of a proper cool-down?

9. How long does it generally take the heart rate to return to 120 beats per minute or below after exercise?

10. What are three aerobic exercises?

11. What are the unique advantages of swimming?

12. In order to achieve real cardiovascular benefits in bicycling, how must you pedal?

Cardiovascular Fitness

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

________ 1. The target heart rate zone during exercise for young adults should fall between 60 percent and 90 percent of the maximum heart rate.

________ 2. Three days per week is the minimum number of aerobic exercise sessions needed to develop cardiovascular fitness.

________ 3. Cardiac output is the amount of blood pumped by the heart in one minute.

________ 4. Adaptation to aerobic activity occurs during a single session of exercise.

________ 5. The heart's function is to pump blood.

________ 6. When the resting heart rate is low, less oxygen is delivered to the muscles.

________ 7. Arteries carry blood away from the heart.

________ 8. To take your pulse, find a vein in either your neck or your wrist.

________ 9. Smoking is one of the greatest risk factors for heart disease.

________ 10 You must reach your maximum heart rate if you wish to achieve a training effect.

________ 11. Doing 20 push-ups daily is one of the best methods for achieving cardiovascular endurance.

________ 12. Aerobic exercise promotes cardiovascular fitness better than any other type of activity.

Cardiovascular Fitness

________ 13. Cardiovascular disease is the number one killer in the U.S.

________ 14. Coronary artery disease is a condition that causes a hardening and narrowing of the coronary arteries, reducing blood flow to the heart.

________ 15. High blood pressure and high blood cholesterol are risk factors that you cannot control.

________ 16. Age, heredity, and sex are risk factors for heart disease that you cannot control.

________ 17. Your pulse is the beat of the heart felt by the pressure of blood on the artery walls.

________ 18. A person in good cardiovascular condition usually has a higher than average resting heart rate.

________ 19. Your recovery heart rate can be used as an indicator of whether your exercise session was too intense and needs to be reduced.

________ 20. The one-mile run and three-minute step test are effective methods of assessing your cardiovascular fitness.

Cardiovascular Fitness

Identification

Write the correct vocabulary term on each line.

____________________ 1. an increase in blood pressure above its normal range; also called *hypertension*

____________________ 2. the number of times a heart beats or pumps per minute; also referred to as *pulse rate*

____________________ 3. a fat-like substance found only in food from animal sources

____________________ 4. a condition that narrows the passageways in the coronary arteries, reducing blood flow to the heart muscle; also called *coronary artery disease (CAD)*

____________________ 5. blood vessels that carry blood *away from the heart* to the body's tissues

____________________ 6. consists of the heart, blood vessels, and the blood; also referred to as the *cardiovascular system*

____________________ 7. the body's ability to deliver oxygen to the working muscles; a health-related component of fitness

____________________ 8. heart rate taken after exercise

____________________ 9. made up of lungs and air passages that help supply oxygen to the body

____________________ 10. one of the two lower chambers of the heart that pumps blood to the lungs or muscles

____________________ 11. blood vessels that carry blood *back to the heart*

____________________ 12. a major artery on both sides of the neck; often used for measuring heart rate

____________________ 13. one of the two upper chambers of the heart

____________________ 14. the beat of the heart felt by the pressure of the blood on the artery walls

____________________ 15. refers to the heart

____________________ 16. the blood vessels that provide blood to the heart muscle

____________________ 17. refers to the heart and its blood vessels

____________________ 18. activities that use the large muscle groups continuously and use oxygen for energy

____________________ 19. the artery on the inside of your wrist; can be used to measure your heart rate

____________________ 20. flaps of tissue in the heart that open and close to control blood flow

____________________ 21. the damage or death of part of the heart muscle caused by a lack of blood; may result from coronary artery disease

____________________ 22. the gas which is exhaled by the lungs during respiration as a waste product

____________________ 23. with oxygen

____________________ 24. the largest artery in the body, through which oxygen-rich blood from the heart flows towards the body's tissues

____________________ 25. the measure of blood force being pushed against the walls of the arteries as blood is pumped by the heart

____________________ 26. a habit or condition that may increase an individual's chance of developing an illness or disease

____________________ 27. the range within which an individual needs to exercise to gain cardiovascular benefit

____________________ 28. refers to positive physical fitness changes in the body as a result of exercise

____________________ 29. the smallest blood vessels in the body's tissues

____________________ 30. the tapering off period after exercise that allows the body to gradually return to a resting state

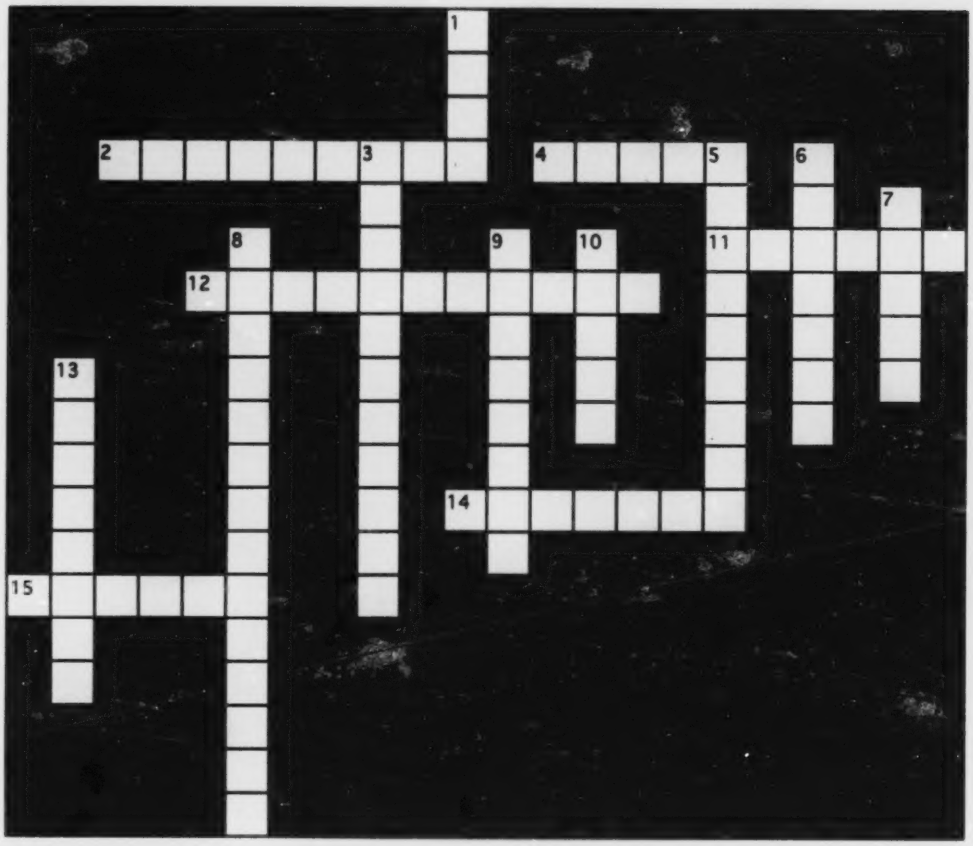
____________________ 31. very high energy activities that do not use oxygen for energy

____________________ 32. the highest number of times a person's heart can beat per minute; found by subtracting your age from 220

____________________ 33. without oxygen

Solve

Use the clues on the following page to solve the crossword puzzle below.


1
2
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15

Cardiovascular Fitness

Across

2. one of the two lower chambers of the heart that pumps blood to the lungs or muscles
4. the largest artery in the body
11. one of the two upper chambers of the heart
12. the smallest blood vessels in the body's tissues
14. with oxygen
15. flaps of tissue in the heart that open and close to control blood flow

Down

1. The number of time a heart beats or pumps blood per minute is the heart ____________ .
3. a fat-like substance found only in food from animal sources
5. without oxygen
6. refers to the heart
7. the beat of the heart felt by the pressure of the blood on the artery walls
8. refers to the heart and its blood vessels
9. blood vessels that carry blood away from the heart
10. blood vessels that carry blood back to the heart
13. Blood vessels that provide blood to the heart muscle are called ____________ arteries.

6

Consumer Health Issues

What's Inside?

Universal Gym Equipment

Vocabulary

Study the vocabulary words and definitions below.

anabolic steroids	an artificial version of testosterone, the male sex hormone that stimulates muscle growth
active exercise equipment	exercise devices that require a person to use muscle power and aerobic energy
appetite suppressants	drugs that block the feeling of hunger
cellulite	a term used to describe the dimpled, bumpy fat that often appears on the hips, thighs, and buttocks
consumer	any person who buys products and services
dehydration	unhealthy loss of fluid from the body's tissues
diuretics	drugs designed to increase the amount of fluids a person loses through urine
ergogenic aids	substances or techniques that claim to enhance a person's performance

Consumer Health Issues

fad	a practice or interest that, for a short time, is followed enthusiastically by many people
fad diet	a diet that causes weight loss using unsound nutritional practices
metabolic rate	a measure of how fast your body burns energy, or calories
passive exercise equipment	exercise devices that do the work for a person; they do not build fitness or help the user lose weight
quackery	dishonest, false practices or claims made by untrained persons pretending to have scientific knowledge
sauna	a steam bath treatment in which the bather is subjected to heat and steam produced by pouring water over heated rocks
spot reduction	a fallacy stating that exercising muscles in a particular area of the body will remove fat from that area

stimulants	drugs that cause an increase in heart rate and blood pressure, and decrease appetite; often used to enhance performance, increase alertness, and delay fatigue
testosterone	a male sex hormone
thyroid hormones	drugs used to control problems that may cause weight gain or other medical problems

Consumer Health Issues

Pre-Test

Consumer Health Issues

Purpose: To test your consumer awareness of fitness, health, and weight-loss claims or products.

Procedure: *Write* **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

__________ 1. Eating extra protein or taking vitamin or mineral supplements will help you build bigger and stronger muscles.

__________ 2. Diuretics help you lose fat by getting rid of fluids in your body.

__________ 3. Rubberized sweat suits speed up your rate of sweating and so help you lose fat.

__________ 4. Electric stimulators, body wraps, constricting bands, and saunas will help you lose fat.

__________ 5. Anabolic steroids are a safe way to increase strength and lean muscle mass.

__________ 6. Massage not only loosens up tight muscles, but helps to break up fat.

__________ 7. You can get rid of fat in a particular area of your body by using the latest fitness gadget.

__________ 8. Name-brand athletic gear always offers more value than athletic gear that is not a name brand.

__________ 9. Advertisements for products shown on TV are guaranteed to be legitimate.

__________ 10. Passive exercise devices are the most effective products for fitness and weight loss.

__________ 11. Fad diets are a healthy way to lose weight and keep it off.

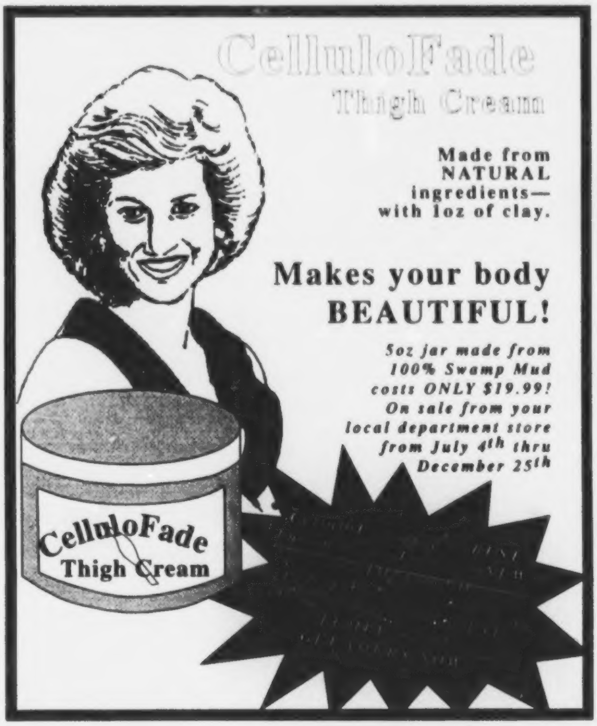
Consumer Health Issues

Introduction

Nearly every week there is a new advertisement for a quick and easy way to lose weight or get in shape. You can see an ad on TV about magic pills that melt away the fat on your body no matter how much ice cream you eat. You can read in a magazine about a vibrating machine that can massage the fat right off your hips. You can hear on radio about an exercise machine that moves your legs for you so you can burn hundreds of calories without doing any work. With all of these simple ways to get fit "just a phone call away," you would expect everyone in America to be fit and trim. Well, all of those ads that seem too good to be true really are just that: too good to be true.

Many people believe these false claims and many others. The more we want a claim to be true, the easier it is for us to believe it is true. Finding a pill that will let us eat endlessly without gaining weight is the kind of claim that answers our wildest dreams.

Dishonest people prey on our hope that fabulous and magical products will work. These people use a practice called ***quackery***. Quackery uses false practices or claims made by untrained persons pretending to have scientific knowledge. *Quacks* and *hucksters* are people who try to cheat people out of money by convincing them to buy gimmicks and gadgets. *Gimmicks* are attention-getting devices used to cheat, deceive, or trick. *Gadgets* are unnecessary mechanical devices that make a product seem "advanced" or "hi-tech." Both are ways to get people to buy products.



CelluloFade
Thigh Cream

Made from NATURAL ingredients—with 1oz of clay.

Makes your body BEAUTIFUL!

5oz jar made from 100% Swamp Mud costs ONLY \$19.99! On sale from your local department store from July 4th thru December 25th

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Millions of people fall for quackery and are ripped off. Quackery is a very big and profitable business.

Teenagers are often taken in by quackery. During our teen years we have a particularly strong wish to look attractive. Teenagers are likely to believe in a quick-fix that will make them look more attractive. Teenagers also want to believe that a product can make them look more masculine or feminine.

Consumers, or people who buy products and services, spend billions of dollars on fitness, health, and weight-loss products each year. Almost all of us will be a consumer of health and fitness products at some time in our life. Although some products are worthless, many health products can be helpful and improve your fitness. How can we become wise consumers when searching for health products? We can use a little bit of knowledge to protect ourselves from products that don't work. Knowledge can help us choose those products that will help us reach our fitness goals. And knowledge will help us recognize those products that offer nothing but an empty promise.

What Influences Your Buying Decision?

Do you buy athletic gear, clothes, and other fitness items because your favorite professional athletes wear them or endorse them in advertisements? Do you buy certain name-brand health and fitness products because everyone else buys them? Do you compare all brands of health and fitness products? Do you then make your selection on which ones give you the best value for your money? To become a wise consumer, you must begin to understand the different reasons we buy products and services.

Celebrity Testimonials: The Famous Face

Consider what many of us feel when we see a star athlete selling athletic gear on TV. We respect and like these sports heroes. We would like to believe that these athletes advertise only high-quality products that improve performance. But this is not often the case. Rarely do celebrities have anything to do with the design or testing of products. Most often, athletes endorse or sell products because they are being paid huge amounts of money. Some star athletes get paid more money to endorse products than they do to play their sport.

Who pays star athletes millions of dollars to endorse products? You do—every time you buy a product these celebrities are pushing. The cost of having professionals endorse a product can easily double its price!

Smart-consumer rule #1: Smart consumers do not let professional endorsements persuade them to buy a product.

Peer Pressure: Following the Crowd

Not only are many people influenced by celebrity advertisements, they are also influenced by their friends. Teenagers are often persuaded by their *peers*—their classmates and friends—to buy a certain name-brand product. One year everyone is wearing a certain make of basketball shoe or sweatshirt. The next year everyone seems to be wearing a certain make of athletic shorts or T-shirts. It feels good to "fit in" with a group and conform to what your friends are doing.

You may want to buy health and fitness items in order to fit in with the crowd. If so, be aware of the reason why you are buying a certain product. Do not fool yourself into believing that you are making your decision strictly on the quality or value of the product. The next time you desire something, ask yourself these questions before you buy:

- Am I buying this item because everyone else has bought it?
- Is it a **fad** that will soon be out of fashion? A *fad* is a practice or an interest followed by many with great enthusiasm. Fads are short-lived. (Check your closet or garage for products that were once fads. After a few weeks or months you lost interest and "retired" the items to a place where they now take up space.)

- Am I getting the best product or value for my money?
- Am I spending more money than necessary just for a certain name-brand item?

Smart-consumer rule #2: Smart consumers buy a product because it fits their needs and offers them value, not because everyone else is wearing or using it. Consumers who are independent thinkers and don't always follow the crowd often make wise consumers.

Avoiding a Rip Off

When you are *ripped off*, you are being sold a product or service that is over-priced or even worthless. Protect yourself against rip offs. Learn to recognize ads that use false information or clever language to persuade you to buy a product.

A smart consumer knows how to separate fact from fallacy. A *fallacy* is a false or mistaken idea, often the result of deception or inaccurate information.

Techniques that will help you separate fact from fallacy include the following:

- Develop a questioning attitude. Ask yourself if the facts support the claims being made.
- If the claims sound too good to be true, they probably are! For example, does the product claim to have a secret ingredient? Does it claim to be good for almost anything? Is it available only from a particular source with payment in advance? Beware of advertisements that play on your emotions and your desire to believe in a magic product.
- Ads frequently use "evidence" that is based on opinion. Unfortunately, people making claims in ads are being paid by the company that makes the product. Many

companies use stars or celebrities to make their products appear more attractive.

- Claims should be backed up with repeated studies that can be confirmed. Does the advertisement include a number or address that you can contact to check on the studies or findings mentioned? Is the study available to consumers? Are the persons who did the study qualified to do research in this particular area?
- Examine the qualifications of the people giving you advice. Even physicians often endorse products for money, not because they believe in the product.
- Seek advice from professionals whom you trust to help you analyze the claims being made.
- Be aware that quacks often encourage people to distrust health professionals such as doctors and registered dietitians.
- Beware of ads that promise...
    - ...to save you money and time.
    - ..."guaranteed satisfaction or your money back."
    - ...you will "see quick and easy results without diet or exercise."
    - ..."no side effects."
    - ...to "flatten and firm your stomach in just minutes a day."
    - ...to "burn several inches off" various body parts.
    - ...a "new scientific breakthrough."
    - ..."instant success."
    - ...to "slim the thighs in just minutes a day."
    - ..."to melt off fat effortlessly."
    - ...a "unique weight-loss system."
    - ...to "burn fat and boost metabolism."
    - ...to "increase your energy and fitness."

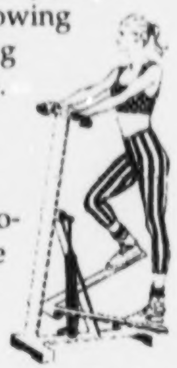
Fitness Gimmicks and Gadgets: Empty Promises and Devices

The news media bombards us with advertisements of fitness and weight-loss products that guarantee to change our bodies from "spud" to "stud" with little effort or time! The different forms of news media include newspapers, magazines, TV, and radio.

Many fitness products are promoted by hucksters and quacks who try to cheat others out of money. They try to sell products that are worthless. Hucksters and quacks are not qualified to make claims about these products. These products fall far short of their makers' claims. Gimmicks and gadgets are a waste of your time and money.

Passive Exercise Equipment: Too Good to Be True

Exercise equipment can be classified as either *active* or *passive*. **Active exercise equipment** requires your body to do the work. When you use items such as stationary bicycles, stairsteppers, treadmills, rowing machines, or weight machines, you exercise your body. Using active equipment is an effective way to improve your fitness.



On the other hand, **passive exercise equipment** does all the work for you. This kind of equipment can also be called *no-effort exercise equipment*. However, there is no such thing as no-effort exercise that can improve your fitness. Passive exercise equipment does not build fitness or help you to lose weight. Passive exercise equipment includes items such as body wraps, rubberized sweat suits, inversion boots, and electric bicycles. Passive devices are essentially a waste of time and money. Let's take a look at these passive devices and their empty promises.

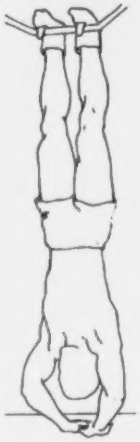
Body Wraps. Some health clubs feature body wraps as a way to lose weight. They claim that being wrapped with tapes soaked in a special solution will dissolve several inches of body fat. However, any weight that a person loses from this method is due to fluid loss. Fluid loss is only temporary. **Dehydration**, an unhealthy loss of body fluids, and heat illness can be a result of this method. Wraps do not promote the loss of fat, and they can be dangerous.

Consumer Health Issues

Constricting Bands. Constricting bands are placed around a specific body part, such as the waist, in an attempt to trim that area. These items give you the illusion of losing fat by squeezing water out of your tissues. Like the fluids lost by using body wraps, the water lost from constricting bands is quickly replaced with your next drink. These items do not work and can be dangerous.

Electric Bicycles. The workout on an electric bicycle is minimal. All an individual has to do is hang on as a motor turns the pedals. The electric cycle does all of the work. The electric bicycle does not produce a fitness training effect or loss of weight.

Inversion Boots. Inversion boots are strapped around the ankles and allow a person to hang upside down. They claim to stretch the spine, improve muscle tone, improve mental function, and relieve stress. Inversion boots have been shown to be dangerous. They increase blood pressure and cause the heart to beat abnormally.



Plastic/Rubberized Sweat Suits. These insulated sweat suits keep the body from getting rid of heat during exercise. Rubberized sweat suits block the body's ability to cool itself. They cause an increase in water loss. Quick water loss makes the body quickly feel tired and exhausted. The fluid lost will be replaced with your next drink. These sweat suits can cause two dangerous conditions: dehydration and heat illness.

Steam/Sauna Bath. The temperature and humidity in steam rooms is high, which causes a person to sweat a lot. A steam bath should never be taken immediately after exercising. The bath keeps the body from getting rid of the body heat created during a workout. In addition, steam baths will cause your body to lose even more body fluids after exercising. This can be very dangerous.

Always cool down and drink plenty of cool liquids before using a steam room. While the moist heat of steam baths can help ease the ache of sore muscles, they do not contribute to real weight loss. Any loss of weight in a steam room is due to fluid loss and is replaced with the next drink.

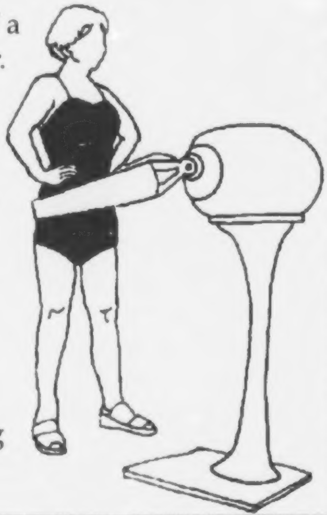
The **sauna** features high temperatures but very low humidity. Sweat does evaporate, but the high heat and high sweat rate make it dangerous to use immediately following exercise. Many people claim that sweating cleanses or removes toxins from the body. However, losing a large amount of sweat also means losing a large amount of important substances found in sweat. If you use a sauna, be sure to drink plenty of cool fluids. The sauna and steam bath are ineffective weight-loss techniques.

Electric Stimulators/Toning Beds. Electric stimulators are machines that cause a mild electric current to move muscles and increase circulation. These devices do not enhance weight loss or increase muscle tone. They can be dangerous.

Thigh, Buttock, or Stomach Reducers. A device that promises to melt away the fat with no effort is a definite rip off! There are no special appliances that can accomplish **spot reduction**, or the elimination of fat from your problem areas. Ads that make this guarantee are making false and dishonest claims.

Bust Developers. These devices promise females that their breasts will become bigger through certain exercises. It is true that certain weight training exercises for the chest can improve the appearance of breasts. These exercise firm and tone the muscles underneath the breasts. But, short of surgery, nothing can be done to increase the size of the actual breasts themselves.

Vibrating Exercise Belts. Exercise belts consist of a wide strap of material attached to an electric motor. The belt is placed around a body part that is to be reduced. Supposedly, the belt vibrates, shakes, or massages fat from the body. These devices do not break up fat or help you to lose weight. They are a waste of time and money.



Massage. Massage may make you feel good, be great for relaxation, and help loosen up tight muscles. However, massage does not break up fat and is useless for weight loss. There is no proven method for kneading, beating, slapping, or rubbing fat off the body!

Consumer Health Issues

Devices that make you work and allow you to apply the training principles of physical fitness development are worthwhile. The no-effort approaches to fitness and weight control, however, are a waste of effort and money. Gimmicks and gadgets that promise fitness, firmness, and weight loss effortlessly in just a few minutes a day are a rip off. The ways to acquire fitness and weight loss require time, patience, and effort.

Common Fitness Fallacies: Separating Fact from Fiction

Advertisements lead people to believe many fallacies about the ways to achieve health, fitness, and weight loss. *Fallacies* are false or mistaken ideas. The wise consumer learns the common fallacies used to sell fitness, health, and weight-loss products.

Fallacy: If I do enough repetitions with a special device, I can "spot reduce," or burn the fat off that area of the body.

Fact: Performing endless repetitions using the latest thigh melter or abdominal exerciser will not trim fat in those areas. We cannot reduce body fat from a selected part of the body through exercise. The way fat is distributed in our body is due to our genetics, or a kind of master blueprint that each of us is born with. Exercising a specific body part can increase muscle tone and firm up that particular area. However, even though the muscle may become stronger, no one will notice if it is buried under a layer of fat.

The only way to reduce fat and tone up your body is with regular vigorous exercise that is continuous for at least 20 minutes and involves entire body movement. An effective plan for reducing overall body fat includes a combination of low-fat eating, aerobic exercise, and muscular fitness activity.

Fallacy: **Cellulite** is a special kind of fat that can be specifically targeted.

Fact: Cellulite is a term coined to describe the dimpled, bumpy fat that often appears on the hips, thighs, and buttocks. Cellulite is nothing more than a lot of fat in certain areas with a slightly different skin texture. This stubborn fat has inspired various therapies, from liposuction (surgical removal) to massage, body wraps, and most popular of all, "anticellulite" creams. These creams affect only the skin's appearance and have absolutely no effect on the fat itself. No cosmetic product can change the structure of your body. A poor diet and lack of physical activity can result in poor muscle tone and excess weight gain. This can cause more fat in specific areas of the body. This excess fat creates a cottage cheese appearance.

Where the additional fat is located depends upon your genetics. Females typically have extra layers of fat on the hips and thighs. Males usually gain fat in the abdominal region.

Instead of worrying about those specific areas, try getting involved in total body aerobic exercises. This will help burn fat all over the body. Aerobic exercise is the only way to rid excess fat from the body.

Fallacy: If I wear a rubberized sweat suit or body constricting bands when I workout, I will lose more weight.

Fact: There are many products such as rubberized sweat suits that claim to assist you in losing weight. But, a high volume of sweat loss does not equal a high amount of fat lost. When you workout, especially in a very hot or humid environment, your body attempts to cool itself by sweating.

The weight you lose while sweating is water loss, not fat. That temporary weight you lose will be replenished as you drink. If you lose too much water, you will risk dehydration and heat illness. This causes a lack of energy and early fatigue.

Exercising in clothing that does not allow the skin to breathe is dangerous. You should wear clothing that allows your sweat to evaporate and thus allows your body to keep cool.

It is important to drink plenty of water before, during, and after physical activity to prevent overheating and dehydration. Staying cool during exercise helps you last longer and perform better.

Fallacy: Fashion in our culture tells us that thin individuals are the ideal "model" body type.

Fact: The model ideal presented by the media is, in fact, an unhealthy standard. Many of today's models suffer from eating disorders, malnutrition, poor muscle tone, and fitness. There are many health risks associated with this lifestyle. Skinny does not necessarily mean healthy or fit. People can look thin, but have a high percentage of body fat. You may be at the appropriate body weight or even lower than the weight standards suggest, yet you may be very flabby and out-of-shape!

Looks can be very deceiving. Good health and fitness require regular exercise and proper nutritional habits.

Fallacy: If I eat only low-fat foods, I won't gain weight.

Fact: Many low-fat products on the market are designed for health-conscious individuals. Fancy advertising claims falsely mislead people into believing that they can eat unlimited low-fat foods and not worry about counting calories or gaining weight.

Low-fat does not necessarily mean low calorie, healthy, or nutritious. Many such products are actually loaded with sugar and calories and often offer little nutrient value.

Fad Diets: A Losing Strategy That Leads to Weight Gain

Most people who want to lose fat think the solution is to find a diet that promises quick weight loss. Americans are willing to pay nearly any price and try any quick-fix method to lose body fat. So Americans continue to buy the endless products and **fad diets** on the market that promise to get rid of fat. However, the only answer is a lifetime commitment to regular exercise and a low-fat diet.

Skinny
FAST

Fad diets are diets that promote weight loss *without* using sound nutritional practices. Most fad diets severely limit the number of calories a person takes in daily. When the body does not get enough calories, it begins to feed upon itself. However, instead of feeding on its fat, the body feeds on its muscle protein for fuel. So while on most fad diets, a person loses mostly muscle and water—with relatively little loss of body fat.

While some diets may result in a temporary weight loss, most are ineffective for permanent fat loss. They can also be hazardous to your health. Scientists have shown that fad diets actually slow your

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metabolic rate. The *metabolic rate* is a measure of how fast your body burns energy, or calories. When you *significantly* decrease the amount of food you normally eat, your body slows down the rate at which it burns calories. If you don't increase the amount you exercise, a fad diet may actually cause your body to gain weight!

There are no quick-fixes to healthy and permanent weight loss. Do not believe the advertising of crash diets, drugs, or any "miracle cures" that promise quick weight loss. Temporary diets produce temporary results. Excess pounds gained on the body have been gained slowly through poor eating habits and lack of exercise. Likewise, permanent weight loss is also a slow process consisting of regular exercise and proper nutrition.

Drugs Used for Weight Control: Harmful Side Effects

Appetite suppressants and **thyroid hormones** are two general categories of drugs commonly used by doctors to treat overweight or obese people.

Appetite suppressants are drugs designed to keep people from feeling hungry. Thyroid hormones are drugs used to treat individuals with thyroid problems that may cause weight gain or other medical problems. These drugs are believed to increase the body's metabolic rate.

These drugs can be used safely when used under a doctor's care. However, these drugs can be dangerous when misused. They have unpleasant or dangerous side effects such as insomnia, dizziness, depression, nausea, and an increase in heart rate. They can also be habit-forming.

Research has shown that very few overweight or obese individuals have a hormone problem. Most people are overweight or obese simply because they have poor nutritional and exercise habits.

Diuretics: Leading to a Dangerous Loss of Water

Diuretics are drugs used to increase the amount of fluids lost through urine. Many individuals take diuretics to increase the amount of water their bodies eliminate. They believe that water loss is true weight loss. Of course, water loss is only temporary. You will replace lost water by drinking fluids.

Using drugs to make your body rid itself of important fluid is dangerous. Diuretics can make you weak and diminish your athletic performance. This extreme loss of fluids upsets the body's chemical balance and can even lead to heart problems. Diuretics are a poor solution to weight loss. Water loss is not true weight reduction because no calories are burned.

The Solution to Weight Loss: Exercise and a Low-Fat Nutritious Diet

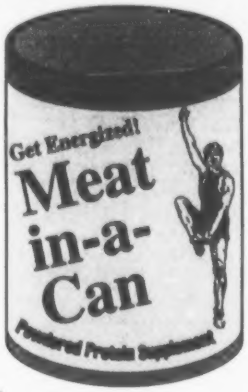
Exercise helps to keep your metabolic rate at a consistently high level. It helps you develop and maintain muscle mass when you are trying to lose weight. Permanent weight control comes from a lifelong commitment to regular exercise and good eating habits. Fad diets and occasional exercise programs will only end in disappointment. Here are some facts to remember regarding weight loss.

- No food or pills have been scientifically shown to burn fat.
- There is no easy and quick way to lose fat.
- Excess calories, that is, calories above your daily needs, will be stored by your body as fat. In addition, your body easily stores fatty foods as fat.
- Diets that eliminate one of the basic food groups are usually not based on sound principles.

Performance-Altering Drugs: Facts and Fallacies

Fitness and sports enthusiasts want to believe claims that certain drugs or supplements can improve their athletic performance. Many athletes are looking for magic pills or potions that may just offer that winner's edge.

It is difficult to improve upon a well-balanced diet. However, various nutritional supplements are popularly used as **ergogenic aids**. *Ergogenic aids* are substances or techniques that distributors claim will enhance performance. Unlike drug manufacturers, supplement distributors can release unproven information and untested products to the public. Health claims made about them do not have to be proven before they are introduced on the market.



Every year Americans spend millions of dollars on useless products that claim to give them a competitive edge. The following are just a few of the more common supplements and what their distributors claim they will do.

Amino Acids/Protein Supplements. Amino acids and protein supplements do not enhance muscle strength or size—training does. Most athletes have protein intakes that exceed recommendations. Too much protein in the diet can harm the kidneys.

Sports Drinks. Most sports drinks offer little advantage over water, especially when you exercise for a short time and at a moderate intensity. Many companies try to attract athletes to their products by claiming that these sports drinks help replace important minerals lost through sweat.

Adequate fluid intake is vital for optimum performance, but no ergogenic benefit has been proven from sports drinks. However, for intense exercise of 90 minutes or more in extreme heat and humidity, sports drinks may be helpful for replacing fluid and lost nutrients.

Stimulants. Various **stimulants** are often taken by active individuals in attempt to improve their physical performance. *Stimulants* are drugs or substances that cause an increase in heart rate and blood pressure, and

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decrease the appetite. They are often used to enhance performance, increase alertness, and delay fatigue. Caffeine, amphetamines, and ephedrine are stimulants commonly used. Stimulants can be dangerous and cause unwanted side effects such as increased anxiety, dizziness, nervousness, irritability, headaches, abnormal heart rate, and addiction.

Vitamins and Minerals. Many companies and writers claim that vitamins and minerals increase energy levels. No vitamin or mineral supplement can provide energy. They should not be used to compensate for a poor diet. While some individuals may require vitamin and mineral supplements, the actual benefit of taking vitamins is doubtful for anyone who eats a well-balanced diet. Regardless of the supplements you take, you still need to eat properly to be healthy and fit.

Some individuals may benefit from a simple multivitamin supplement. Those individuals for whom supplements can be appropriate include dieters on a restricted-calorie diet, athletes who exercise heavily, pregnant women, total vegetarians, and individuals with food allergies. Supplements do not enhance performance, increase strength, provide energy, or build muscles.

Anabolic Steroids. *Anabolic steroids* are a synthetic version of the male sex hormone, **testosterone**. Steroids have become an ergogenic aid to increase strength and lean muscle mass. For steroids to help build muscle, they have to be taken along with a strenuous weight training program and diet. However, steroids have many serious and dangerous side effects. Steroids are illegal unless prescribed by a physician.

Steroids have many negative side effects that differ for males and females.

Side Effects of Steroids…

For Men

- Stunted growth
- Baldness
- Shrunken testicles
- Impotence and sterility
- Severe acne
- Liver and kidney damage
- Increased agression
- Hallucinations
- Cancer
- Heart disease

For Women

- Breast shrinkage
- Increase of masculinity
- Facial hair
- Enlarged clitoris
- Deepened voice
- Depression
- Hallucinations
- Kidney damage
- Heart disease
- Menstrual irregularities

Doctors prescribe steroids to patients only for medical reasons. The use of steroids to improve performance, or gain strength or muscle size is not a medical reason and is clearly not worth the health risks.

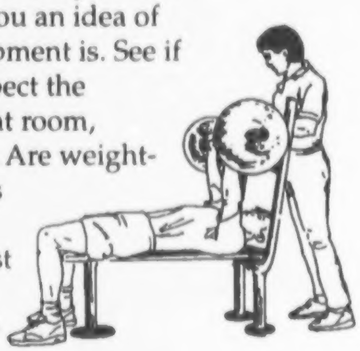
Once again, the answer to improving your physical appearance or performance is *not* found in drugs.

Health Clubs: Finding One That Fits Your Needs

Over ten million Americans work out in health clubs. Before you join one, find out all you can about it. Some are reputable; some may not be. And some will fit your needs better than others. The following is a list of some of the things you should know before joining a local health, fitness, or sports club.

Get referrals. When you are in the market to join a health club, get recommendations from people who have goals and interests similar to your own. Ask club members what they like and dislike about their health club.

Visit the club. Go to the facility during the time you will be working out. This will give you an idea of how busy the club and the equipment is. See if the club is well maintained. Inspect the equipment and machines, weight room, aerobics room, and locker room. Are weight-room rules and safety reminders posted? Are there enough instructors or employees to assist you? Do members receive adequate instructions on how to use the equipment? Are they knowledgeable on all the equipment. Do they explain how to use the equipment in easy-to-follow language?



Does the club have a good history record? Call your local consumer protection agency and Better Business Bureau to see if any complaints or negative reports have been filed against the club. You may want to look for an established club that has been in business for a while.

Is the club adequately insured? Many states require health clubs to post bond money. Bond money protects members from losing their money if the club goes out of business.

Does the club have qualified instructors? Ask if the club employs certified personal trainers and fitness and aerobic instructors. Instructors should be certified by a nationally recognized certification program and/or have a college degree in physical education or other fitness-related major. In addition, all instructors and employees should be certified in cardiopulmonary resuscitation (CPR) and first aid.

Does the club offer a variety of fitness classes? Check to see that the club offers a variety of fitness classes. Do they offer many types of fitness classes at different intensity levels? Attend a trial class at peak times or when you might be regularly attending the club.

Watch out for hard-sell. "Try out" the club before becoming a member. Even if you are highly interested in joining, ask for a trial membership to make sure the club fits your needs and desires. Hard-sell advertising often means that a club needs a large membership to support high operating costs. And a large membership may mean the facility is overcrowded.

Avoid signing your life away. Many clubs try to get you to sign long-term contracts. Since a large number of new members quit using a health club after a few months, it might be better to sign up on a monthly basis.

Read the membership contract. Make sure you understand all portions of the membership contract. Ask if the membership includes access to the whole facility and all programs offered. Find out if you can workout anytime the club is open for business. See that there is a clause in the contract that gives you a refund in the event you become ill, disabled, or move before it expires. Don't rely on verbal agreements. Carefully read the "waiver of liability." If you sign a contract and then change your mind, most states have a three-day period during which you can back out of the contract.

Checking Out a Health Club

Purpose: To become aware of the features to look for in a health club when deciding whether or not to join.

Procedure:

1. Visit a local health club, fitness center, or sports club.
2. Get answers to the following questionnaire about the facility, membership, and programs available.
3. Get copies of brochures, flyers, or schedules describing the club, the programs, and membership information.
4. Draw conclusions from your findings and record them.

Health Club Questionnaire

Name of Facility:	**Your Name:**	**Date:**
Manager or Salesperson:	**Club Address:**	

Club Hours: M ____ - ____ T ____ - ____ W ____ - ____ T ____ - ____ F ____ - ____ S/S ____ - ____

Membership Costs:	Per Week: $	Per Month: $	Per Six Months: $	Per Year: $

Write in the number available:	Instructors	Weight Rooms	Fitness/Aerobic Rooms	Personal Trainers	Others

Type of Equipment:	Weight Training Equipment (pcs.)	Cardiovascular Equipment (pcs.)	Locker Rooms	Showers

Check ALL Special Programs/Services that apply:

____ Child care
____ Physical fitness evaluation
____ Beginner's programs
____ Personal training
____ Body composition testing
____ Body conditioning/calisthenics classes
____ Nutritional Analysis
____ Aerobics classes
____ Others

Write *yes* or *no* to answer:

______ Are there different types of membership plans available?
______ Are there extra charges for any of the activities, programs or classes?
______ Are there any restrictions on the availability of certain pieces of exercise equipment or facilities?
______ Are there locker rooms and shower facilities?
______ Is instruction given to individuals?
______ Is instruction given only to groups?
______ Is instruction given by appointment?
______ Is instruction given at all times?
______ Is instruction given at only established times?

Any other important information about the facility, its programs, etc.:

Conclusions

1. Would you be personally interested in joining this health club?

   ____

   Why or why not? ______________________________

   ____

2. Would you recommend this health club to someone? __________

   Why or why not? ______________________________

   ____

3. What did you like the most about the health club? __________

   ____

4. What did you feel was the greatest drawback to the health club?

   ____

5. Did the people in charge seem concerned, knowledgeable, and enthusiastic?

   ____

6. Additional comments: __________________________

   ____

   ____

Summary

Have you ever been tempted to buy a product that promises bulging biceps, a flat stomach, thinner thighs, or endless energy?

Before you buy any product to improve your fitness, become informed. Fat-fighting advertisements bombard us with the "sure cure" to the problem of obesity. Hucksters and quacks often claim that just by ordering the latest "proven method" for fighting flab, one can have a "toned, lean, and muscular body" overnight. Protect yourself from being ripped off by understanding some basics on how the body responds to exercise. Do not let someone sell you worthless products. No product can improve your health in no time at all. Do not be taken in by products that claim to do the work for you or promise miraculous results. Learn to be a smart *consumer.* Do not buy worthless products.

As interest in fitness and health has increased, so has the number of health clubs. Your decision on whether to join a club and how to select one should depend on many factors. For example, what does a membership cost and what are your personal needs or desires? Get answers to the *Health Club Questionnaire,* and inspect the club before you sign a contract to become a member.

Top performance cannot be achieved through pills, powders, or drinks, but only through a rigorous training schedule. Your energy needs are best filled through a variety of foods and adequate fluid intake. There's only one way to improve your performance: You have to train hard and regularly, and eat properly.

Fitness Career Opportunity!

The Sports-Medicine Physician

Sports-medicine physicians practice in sports-medicine clinics or work as team physicians. They treat sports-related injuries and help educate athletes in the prevention of injuries. Most sports-medicine physicians specialize in orthopedic surgery. An orthopedist treats muscular and skeletal injuries. Employment outlook is very good for this medical, professional field.

For more information contact:

American Sports Medicine Association
Board of Certification, Inc.
660 West Duarte Road, Ste. 1
Arcadia, CA 91007
(818) 445-1978

American Academy of
Orthopaedic Surgeons
6300 N. River Road
Rosemont, IL 60018-4242
(708) 823-7186)

American Medical Society for Sports
Medicine (AMSSM)
7611 Elmwood Ave., Ste. 202
Middleton, WI 53562
(608) 831-4484

The American College of
Sports Medicine (ACSM)
P.O. Box 1440
Indianapolis, IN 46202-3233
(317) 637-9200

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Identifying Quack Products

Purpose: To become a more familiar with quack products in fitness, health, and weight loss; to become more familiar with the fallacies many people believe about losing weight.

Procedure: *Complete the following activity by polling five different individuals. Write their responses to the following questions on the lines below.*

1. What would you do to lose weight in your stomach area?

2. How would you attempt to lose fat on your thighs or buttocks?

Consumer Health Issues

3. If you could take a pill with a secret ingredient that guaranteed that you would lose 10 pounds in the first week, would you do it? What if there were dangerous side effects?

4. What fitness or health gimmicks or gadgets have you purchased? Did they do for you what they claimed they would? Explain.

5. Have you ever been on a diet? What program did you use? Did you lose the weight you desired? Did you keep the weight off?

6. What gimmicks or gadgets on the market today do you think are the biggest rip offs? Why do you think people buy them?

Consumer Health Issues

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

________ 1. Vitamins can increase your energy levels.

________ 2. Extra protein is helpful for building bigger and stronger muscles.

________ 3. Using electric stimulating devices will help you develop muscle tone and strength.

________ 4. Rubberized sweat suits are one of the best ways to lose weight.

________ 5. Name-brand athletic gear is always the best value for your money.

________ 6. Performing endless abdominal exercises using a special device will remove fat from the stomach quickly.

________ 7. Toning beds will not improve fitness or help you lose weight.

________ 8. Losing excessive fluids while exercising in a rubberized sweat suit or body constricting bands can lead to dehydration and heat illness.

________ 9. Diuretics can upset the body's chemical balance.

________ 10. Massage helps break up fat cells by kneading and rubbing the body.

_________ 11. Knowledge and awareness are the keys to recognizing false information and worthless products.

_________ 12. Testimonials on TV are always a true sign that a product is worth your money.

_________ 13. Anabolic steroids can cause kidney damage, heart disease, and stunted growth.

_________ 14. Quacks and hucksters are people who can help you avoid being ripped off.

_________ 15. Active exercise equipment has the potential to improve physical fitness.

_________ 16. Body wraps, constricting bands, and electric stimulators are passive exercise devices that assist in weight loss.

_________ 17. Cellulite is a special kind of fat that can be reduced using thigh-reducing creams.

_________ 18. The only way to achieve fitness is through proper exercise.

_________ 19. Although some physical fitness quackery may not harm you, quackery cannot help you become fit.

_________ 20. A fact is a false or mistaken idea, often the result of deception or inaccurate information.

_________ 21. A measure of how fast your body burns energy, or calories, is called its *metabolic rate*.

Consumer Health Issues

Multiple Choice

Circle the letter of the correct answer.

1. An effective method for losing fat is the use of a(n) ___________ .

   a. rubberized sweat suit
   b. electric stimulator
   c. body wrap
   d. none of the above

2. Exercising in a rubberized suit will ___________ .

   a. hinder the body's ability to cool itself
   b. cause an increase in water loss
   c. lead to dehydration
   d. all of the above

3. You can tell if the claims of a product are true if ___________ .

   a. a professional athletic endorses the product
   b. testimonials are made by people in TV advertisements
   c. claims are backed up by sound scientific studies
   d. physicians promote the product

4. You should check ___________ before deciding whether to join a health club.

   a. the qualifications of the instructors
   b. the maintenance and cleanliness of the equipment and facility
   c. whether the club offers a variety of fitness classes, cardiovascular machines, and weight-training equipment
   d. all of the above

5. A false or mistaken idea, often the result of deception or inaccurate information, is a ___________ .

   a. quack
   b. fallacy
   c. myth
   d. none of the above

6. A dishonest, false practice or claim made by untrained persons pretending to have medical knowledge is called ___________ .

   a. gimmickry
   b. huckstery
   c. quackery
   d. fallacy

7. The special dry heat produced by pouring water over heated rocks to make people sweat is found in a ___________ .

   a. sauna
   b. diuretic room
   c. gadget booth
   d. quackery

8. ___________ are people who buy products and services.

   a. Hucksters
   b. Quacks
   c. Consumers
   d. Frauds

9. ___________ are drugs which block the feeling of hunger.

   a. Thyroid hormones
   b. Diuretics
   c. Steroids
   d. Appetite suppressants

10. ___________ are people who cheat other people out of money by selling gimmicks and gadgets.

    a. Fads
    b. Hucksters
    c. Salesmen
    d. Consumers

Consumer Health Issues

11. Exercise devices that do the work for you and do not build fitness or help you to lose weight are called ____________ .

    a. passive exercise equipment
    b. active exercise equipment
    c. weight training equipment
    d. both a. and b.

12. ____________ describe substances or techniques that claim to enhance performance.

    a. Gimmicks
    b. Diuretics
    c. Ergogenic aids
    d. Inversion facts

13. Drugs used to control problems that may cause weight gain or other medical problems are ____________ .

    a. appetite suppressants
    b. diuretics
    c. thyroid hormones
    d. all of the above

14. Drugs often used to enhance performance and that can cause a dangerous increase in heart rate and blood pressure are

    ____________ .

    a. thyroid hormones
    b. stimulants
    c. vitamins
    d. depressants

15. A term used to describe the dimpled, bumpy fat, that often appears on the hips, thighs, and buttocks is ____________.

    a. obesity
    b. cellulite
    c. cottage cheese
    d. liposuction

Consumer Health Issues

Identification

Write the correct vocabulary term on each blank.

________________ 1. drugs designed to increase the amount of fluids a person loses through urine

________________ 2. unhealthy loss of fluid from the body's tissues

________________ 3. a steam bath treatment in which the bather is subjected to heat and steam produced by pouring water over heated rocks

________________ 4. an artificial version of testosterone, the male sex hormone that stimulates muscle growth

________________ 5. drugs that block the feeling of hunger

________________ 6. a measure of how fast your body burns energy, or calories

________________ 7. a male sex hormone

________________ 8. a term used to describe the dimpled, bumpy fat that often appears on the hips, thighs, and buttocks

________________ 9. drugs used to control problems that may cause weight gain or other medical problems

________________ 10. a practice or interest that, for a short time is, followed enthusiastically by many people

Consumer Health Issues

________________ 11. a diet that causes weight loss without using sound nutritional practices

________________ 12. dishonest, false practices or claims made by untrained persons pretending to have scientific knowledge

________________ 13. exercise devices that do the work for a person; they do not build fitness or help the user lose weight

________________ 14. substances or techniques that claim to enhance a person's performance

________________ 15. exercise devices that require a person to use muscle power and aerobic energy

________________ 16. any person who buys products and services

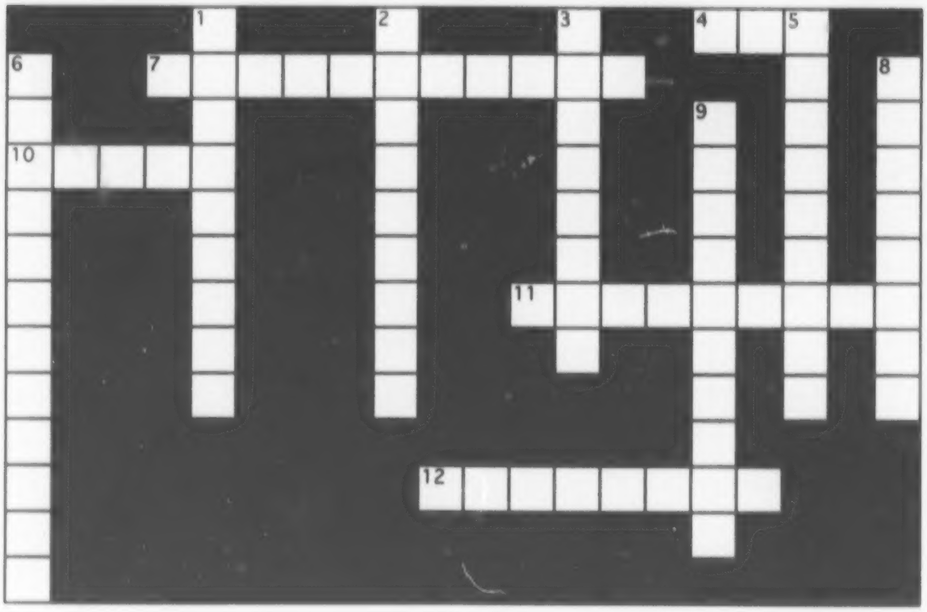
________________ 17. drugs that cause an increase in heart rate and blood pressure, and decrease appetite; often used to enhance performance, increase alertness, and delay fatigue

________________ 18. a fallacy stating that exercising muscles in a particular area of the body will remove fat from that area

Consumer Health Issues

Solve

Use the following clues to solve the crossword puzzle below.



Across

4. a practice that, for a short time, is followed enthuasistically by many people
7. unhealthy loss of fluid from the body's tissues
10. a steam bath treatment in which the bather is subjected to heat and steam produced by pouring water over heated rocks
12. Drugs that block the feeling of hunger are called ______________ suppressants.

Down

1. ______________ rate is a measure of how fast your body burns energy, or calories.
2. Substances or techniques that claim to enhance a person's performance are called ______________ aids.
3. any person who buys products or services
5. drugs designed to increase the amount of fluids a person loses through urine
6. a male sex hormone
8. dishonest, false practices or claims made by untrained persons pretending to have scientific knowledge
9. drugs that cause an increase in heart rate or blood pressure

7

Personal Fitness Program

What's Inside?

An Alpine Skier

Personal Fitness Program

Review Vocabulary

Study the review words below.

set

F.I.T.

pulse

warm-up

heart rate

flexibility

cool-down

repetitions

calisthenics

muscle fitness

weight training

aerobic exercise

physical fitness

muscular strength

body composition

resistance training

muscular endurance

cardiovascular fitness

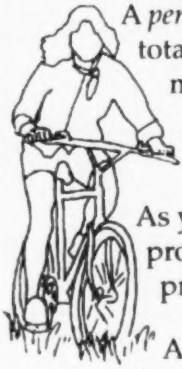
target heart rate zone (THRZ)

Personal Fitness Program

Introduction

Nearly everyone wants to achieve total fitness and wellness. Totally fit and well people are physically and mentally healthy. They enjoy life and gain satisfaction from their social and spiritual self. Achieving total fitness and wellness is a process. You need to work towards it one step at a time. The first step in achieving total fitness and wellness is to begin a personal fitness program.

What Is a Personal Fitness Program?



A *personal fitness program* is a plan you design to help improve your total fitness. Designing your own fitness program allows you to make choices. You can include activities that you enjoy. You can plan your workout schedule around your school day and work hours. And you can set goals that fit your needs.

As your fitness level improves, you can change your fitness program to meet your new needs. You can also alter your program to work around injuries or other problems.

A complete personal fitness program aims at developing all of the health-related components of physical fitness. The health-related components include body composition, flexibility, muscular strength, muscular endurance, and cardiovascular fitness. To improve in these components, you may need to make some changes in your *lifestyle*. Your lifestyle is the way you conduct your life. For example, you may need to modify your diet to improve your nutrition. Or you may need to exchange a few hours of weekly TV watching to complete your workout schedule.

Why Is a Personal Fitness Program Important?

Commit yourself to a regular program of aerobics, strengthening, stretching, and proper nutrition, and you will look better and feel fantastic!

Personal Fitness Program

Steps in Designing Your Personal Fitness Program

Follow the steps below to design a sound and complete personal fitness program.

1. Evaluating Health-Related Fitness Components
2. Setting Personal Goals
3. Selecting Appropriate Activities
4. Applying the F.I.T. Formula
5. Tracking Your Progress/Periodic Assessments

1. Evaluating Health-Related Fitness Components

Before you can decide what kinds of exercise you need, you must determine your level of fitness. You should be aware of your current level of cardiovascular fitness, muscular strength and endurance, flexibility, and body composition

Give the greatest attention in your personal fitness program to your weakest areas. For example, if you scored low in muscular strength, make weight resistance a key part of your program. However, do not ignore the areas in which you scored well. Include activities to *challenge* your strong areas. You must continue to exercise regularly to *maintain* physical fitness.

2. Setting Personal Goals

Ask yourself what you would like to accomplish from your exercise program. Determine what areas of fitness you need to improve and also what areas you would like to improve.

Setting goals you can reach will encourage you to stay with your exercise program. Do not set goals to compete with friends or classmates. Try to avoid comparing your fitness level and progress with others. Competition can add stress to your exercise program rather than reduce it!

Set short-term as well as long-term goals for each of the health-related fitness components. Make your goals specific. For example, a short-term goal might be to improve your scores on the various health-related fitness assessments. Another short-term goal might be to eat healthier foods.

Long-term goals might include to improve your body composition (less fat and more muscle) or improve your posture. Other long-term goals might include to tone and define your leg muscles and become stronger in the upper body.

Establish a reward system for your goals. Try to remain focused on the process of physical exercise rather than an end result. Focus on your journey to a healthy destination! However, enjoy a sense of pride and accomplishment when you reach your goals. Reward yourself each time you reach a small goal.

3. Selecting Appropriate Activities

For overall fitness and health, a combination of aerobic exercise and muscle fitness activities are both necessary. In addition, stretching exercises for flexibility need to be included in the warm-up and cool-down portion of every workout session.

Consider your health and physical fitness level when selecting activities. Pick activities in which you either have some knowledge, skill, or ability, or that you are interested in learning.

Try to select a variety of activities, some indoors and some outdoors. Choose an exercise that you can do anytime anywhere, even if you are alone.

Change your routine occasionally and learn to cross train. Use *cross training* by participating in different activities to improve fitness components and a specific part of the body. For example, to improve your cardiovascular fitness, you can run on one day and then bicycle on the next day. Cross training helps to prevent boredom, burnout, and makes your workout routine more enjoyable.

Rating Physical Activities

The following chart lists each health-related component of physical fitness. Below each component is a rating number that describes the level of benefit you'll receive from a particular activity. Remember, the way in which you participate in an activity affects the benefits you can receive.

Physical Activity Ratings

1 = Low Benefit
2 = Average Benefit
3 = Very Effective/High Benefit

Activity	Flexibility	Cardio-fitness	Muscular Strength	Muscular Endurance	Body Composition
Aerobic Dance	3	3	1	2	3
Baseball	1	1	1	1	1
Basketball	1	3	1	2	3
Bicycling	1	3	2	2	3
Boxing	1	3	2	3	3
Calisthenics	3	1	2	3	2
Football	1	1	1	2	1
Golf (walking)	1	1	1	2	1
Gymnastics	3	1	3	3	2
Hockey	1	3	1	2	2
Jogging	1	3	1	2	3
Jump Rope	1	3	1	2	3
Karate	3	1	2	2	1
Racquetball	1	2	1	2	2
Rowing	1	3	1	2	3
Scuba Diving	1	2	1	2	1
Skiing (Downhill)	1	2	2	2	1
Skiing (Cross County)	1	3	2	2	3
Skating (Ice/Roller/In-line)	1	2	2	2	2
Soccer	1	3	1	2	3
Step Aerobics	2	3	2	2	3
Swimming	2	3	2	2	3
Tennis	1	1	1	2	1
Volleyball	1	1	1	2	1
Walking	1	2	1	2	2
Waterskiing	1	1	2	2	1
Weight Training	2	1	3	3	2
Yoga	3	1	1	2	1

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Personal Fitness Program

Choosing Physical Activities

Purpose: To help you brainstorm ideas and feelings about various physical activities before designing your personal fitness program.

Procedure: Think about each statement below. Then write down your response. You may want to use the *Rating Physical Activities* chart on page 290 for a list of possible physical activities.

1. Sports/recreational activities that I enjoy include ______________ .

   ____

2. Exercises I like include ______________________________ .

3. Activities that promote flexibility that I enjoy or would consider participating in are ______________________________ .

4. Activities that promote cardiovascular fitness that I enjoy or would consider participating in are ________________________ .

5. Activities that promote muscular strength that I enjoy or would consider participating in are ________________________ .

6. Activities that promote muscular endurance that I enjoy or would consider participating in are ________________________

   ____ .

7. Activities that will improve my body composition are ___________

   ____ .

8. Do I prefer to exercising by myself or with others? (Explain your answer.) ____

9. The best times and days for me to exercise are ________________ .

10. I would consider exercising __________ times (frequency) per week, and for __________ (length of time).

11. The place(s) I would like to exercise is (are) __________________ .

12. Clothing, equipment, or other resources needed for the exercises or activities I want to participate include ______________________ .

13. The costs for the activities/facilities/special programs or classes/equipment/clothing would be approximately ________________ .

4. Applying the F.I.T. Formula: Training Principles

Begin an exercise program by working out three times a week. When your body has adjusted to the demands of the exercise, you may increase the frequency of your workouts to four or five times per week. Exercising three times a week helps to maintain fitness. Exercising four or five times a week helps to increase it.

Be sure to exercise aerobically a minimum of three times each week. Do resistance training a minimum of two times per week. Always perform stretching exercises before and after each workout session to increase flexibility and prevent injury.

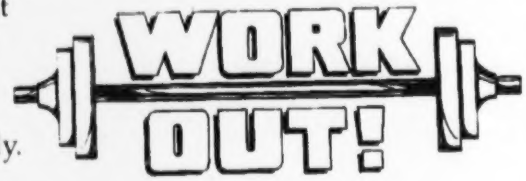
Your personal goals and current level of fitness will determine how intense your exercise program should be. For most people, regular exercise at a moderate intensity is best. Try to pace yourself, listen to your body, and challenge your body gradually.

Personal Fitness Program

As a general rule, when exercising aerobically you should be able to carry on a conversation ("talk test") and not be short of breath. Measure your exercise heart rate once a week or so to check the intensity of your exercise. First, take your pulse before you begin exercising. Second, take your pulse at the peak or completion of the most intense part of your aerobic workout. And third, take your pulse after the cool-down.

To maintain a good level of aerobic conditioning, work up to 20 minutes or more of aerobic exercise per session.

In an overall, moderate weight training program, do a minimum of two to three workouts per week for 30 minutes to an hour. You may choose to do calisthenics, free weights, or weight machine exercises. Your muscular fitness program should include exercises for all the major muscle groups of the upper and lower body.



What type of muscular fitness exercises or program you will choose depends upon your personal goals. To develop muscle tone and general strength, use low weight and perform high repetitions. To develop muscular strength and growth, use high weight and perform a low number of reps.

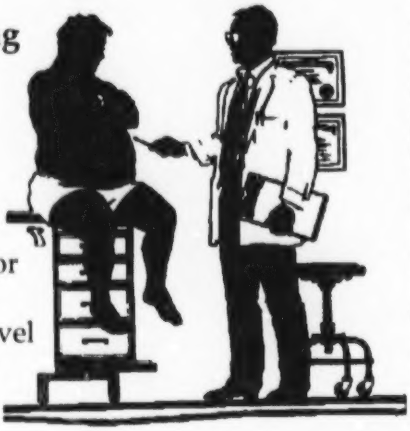
Work on all the major muscles in your muscle fitness program. This will help prevent overdeveloping one muscle group while neglecting the muscles on the opposite side of the joint.

5. Tracking Your Progress/Periodic Assessments

Keeping a workout log will encourage you to keep up with your exercise program. A workout log will also help you measure your progress. Writing down the activity, days you exercise, and the distance or duration of each exercise session help you keep track of your improvements. It can also be helpful to make a notation about how you felt during and after each workout.

You may want to periodically re-evaluate your exercise program. Re-evaluating your program after four weeks and then again after eight weeks will help you see if you have reached short-term goals. It will also help you see if you are getting closer to long-term goals. Realize that you will not make drastic improvements in that short amount of time. Also, it is important to be aware that you may improve at a quicker rate in some areas than others. Use the results of these evaluations to update your personal goals.

Other Considerations When Designing Your Personal Fitness Program



Medical Exam. Check with your doctor before beginning any exercise program, especially if you had a serious illness, injury, or have a risk factor for heart disease. A doctor may give you the green light to exercise. Or, based on your medical history and present level of fitness, the doctor may tell you to proceed with caution, and outline which activities to avoid.

Warm Up/Cool Down. Before engaging in any exercise, take the time to warm up. A warm-up includes exercises that increase the body's temperature and the muscles for more vigorous activities. An adequate warm-up prevents sudden strain on the heart and circulatory system. A warm-up is the best insurance against injury and muscle soreness. Injury and soreness are common reasons for dropping out of an exercise program.

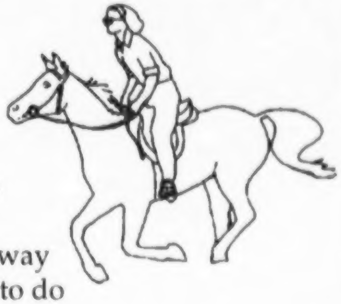
Cooling down after exercise is also essential. The cool-down is the tapering off period after exercise that allows the body to gradually return to a resting state. The cool-down helps to eliminate body heat and return the blood from the muscles to the heart.

Order of Workout. Many people choose to alternate days for aerobic workouts and muscle fitness workouts. For instance, you might do aerobics on Mondays, Wednesdays, and Fridays, and do weight training on Tuesdays, Thursdays, and Saturdays. You can participate in aerobics and strength training on the same days if you prefer. Always make sure to first warm up, workout, and then cool down.

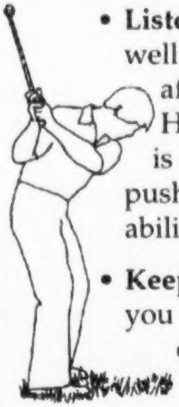
Motivation: Reasons to Continue Exercising

Do you need a reason to exercise or to continue your program? You are not alone. We all need *motivation*, or encouragement, to stick with a program. Starting an exercise program is not the difficult part. Staying with the program, or committing yourself to a healthy, active lifestyle is!

Beginning an exercise program doesn't necessarily improve your health and fitness, but staying with your exercise program on a long-term basis will! Here are some tips to help you keep it up.

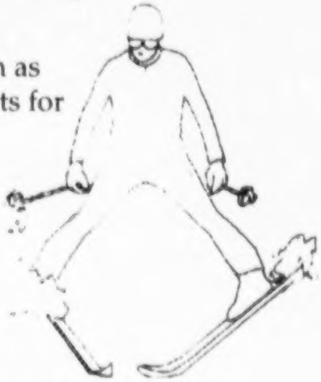


- **Make it fun.** Find an activity that you enjoy and you are more likely to stick with it!
- **Start slowly.** Begin your exercise routine slowly and build gradually as your body adapts to the new demands. The quickest way to ruin your enthusiasm and risk injury is to do too much, too soon.
- **Be patient.** Don't expect dramatic changes overnight! Changes occur gradually over weeks and months. You will begin to see and feel changes after about four to six weeks of working out. As you develop your fitness habit, you will notice increases in energy and other healthy side effects in addition to looking and feeling better!



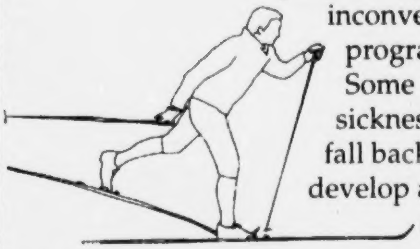
- **Listen to your body.** It takes muscles time to become well conditioned. Expect a little stiffness and soreness after strenuous physical exercise or a new activity. However, sharp, specific pain or unusual discomfort is the body's signal that something is wrong. Never push through pain. If it hurts, stop. Work within your abilities.
- **Keep it convenient.** Choose an exercise or activity that you can do anytime, anywhere, even if you are alone. If exercise is convenient you are more likely to do it.

- **Be disciplined.** Remind yourself of the image or picture you have created of how you want to be. Consistently work towards that image in a healthy way.
- **Gain knowledge.** Read and learn as much as you can about health and fitness. Ask experts for advice or to explain anything you may be confused about.
- **Keep a positive attitude.** Focus on all the benefits of exercise. Be proud of yourself as you gain new strength, endurance, energy, confidence, and a healthy lifestyle!



- **Exercise with a friend.** Working out with a buddy can help increase your chances of continuing your new fitness habit. Both you and your partner need to be reliable and committed to sticking with the program. Working out with someone can be twice the fun of exercising alone!
- **Join a support group.** Enlist support from family and friends. They can serve as encouragement as you make strides in your exercise program. Perhaps a parent can initial your workout log after your exercise session to assure you have actually performed it!
- **Join a club.** You might want to consider joining a health club, organization, signing up for a fitness class or other program of interest to you. The more appealing your fitness program is to you, the more likely you'll make it a regular part of your daily routine!
- **Schedule exercise time.** Make exercise a part of your lifestyle by setting aside a certain period of time each week for it. Make appointments with yourself to exercise. Treat these appointments as serious as you would any of your other responsibilities. Be accountable and responsible for your health and fitness!

- **Keep a balanced perspective.** Total fitness and wellness involves more than exercising. Eating properly, coping with stress and getting sufficient rest are also important ingredients for your physical health.
- **List possible setbacks.** Make a list of obstacles you could face on your road to fitness. For example, some people may find their workout schedule inconvenient. Others may find the program they have designed too hard. Some may suffer from "burnout" or sickness or injury. And some people will fall back into poor habits. Take the time to develop a plan to prevent and overcome setbacks.



Before you start your personal fitness program, identify certain attitudes and feelings that you have about physical activity. Your past experiences will influence how you feel about exercising. Being aware of a poor attitude towards physical activity can help you understand why you may not be motivated to exercise.

Take the following attitude profile to gain awareness of your past record of exercise and your attitudes about physical activity.

Personal Fitness Program

Attitude Profile

1. What has made you decide to begin an exercise program?

   ____

2. Do you have any negative feelings toward or have you had any bad experiences with physical activity programs?

   yes __________ no __________

   Explain: ______________________________________

   ____

3. On a scale from 1 to 5 (5 = highest), rate how you feel about your body in the following areas:

   Strength: ____________________________________

   Health: ______________________________________

   Attractiveness: _______________________________

   Fitness: _____________________________________

4. Rate yourself on a scale of 1 to 5 (5 = highest) in the following areas:

   Your present athletic ability: ____________________

   Your need to compete when exercising or playing a sport: ________

   Your present level of cardiovascular fitness: ____________

   Your present level of muscular fitness: ______________

   Your present level of flexibility: __________________

Personal Fitness Program

5. When you do not exercise as often as you should, it is usually

   because ____.

6. Are you currently involved in a regular exercise program?

   yes __________ no __________

   If yes, specify the type of exercise(s): ______________________

7. What types of exercise or activities interest you? ______________

   ____

8. Rank your goals in beginning this exercise program. What do you want to gain from an exercise program? Use the following scale to rate each goal separately. (See page 300.)

Ranking Personal Fitness Goals

Personal Goals	Extremely Important			Somewhat Important				Not At All Important		
To lose body fat/improve body composition	1	2	3	4	5	6	7	8	9	10
To increase lean muscle/muscle strength	1	2	3	4	5	6	7	8	9	10
To improve cardiovascular fitness	1	2	3	4	5	6	7	8	9	10
To reshape or tone my body	1	2	3	4	5	6	7	8	9	10
To improve athletic performance	1	2	3	4	5	6	7	8	9	10
To improve physical health	1	2	3	4	5	6	7	8	9	10
To improve my mood and help in coping with stress	1	2	3	4	5	6	7	8	9	10
To improve my flexibility	1	2	3	4	5	6	7	8	9	10
To increase my energy level	1	2	3	4	5	6	7	8	9	10
To improve self-esteem	1	2	3	4	5	6	7	8	9	10
To meet social needs	1	2	3	4	5	6	7	8	9	10
To improve overall lifestyle	1	2	3	4	5	6	7	8	9	10
To improve nutritional/dietary habits	1	2	3	4	5	6	7	8	9	10
Other____________________	1	2	3	4	5	6	7	8	9	10

9. Would you like to change your body weight?

yes __________ no __________

By how much? ______________________________(+/–) pounds

10. What is your current percentage of body fat? ________________

Is your body composition where you would like it to be?

yes __________ no __________

Explain: ____

____

____

____

11. What is your current body weight? ________________________

Is your body weight where it should be or where you would like it to be?

yes __________ no __________

Explain: ____

____

____

12. How would you like for your body to look? ________________

Explain: ____

____

According to your particular body type, is this realistic?

yes ____________ no ____________

13. How would you like for your body to function? ________________

____

Explain: ____

____

____

Personal Fitness Program

Summary

A complete personal fitness program involves all of the health-related components of physical fitness. By itself, no single activity or exercise can help you accomplish flexibility, cardiovascular fitness, muscular strength, muscular endurance, or a healthy body composition. You must include a variety of activities in your exercise program to develop all areas of physical fitness. You also must build a healthy lifestyle.

Strength training and aerobic conditioning should be the primary focus of your personal fitness program. Strength training will lift and tone the muscles. Aerobic conditioning will strengthen the heart and decrease the overall amount of body fat. Flexibility can be developed and improved by stretching before and after any exercise. Proper nutrition and a well-rounded exercise program will help improve your body composition.

There are important steps to take in designing your personal fitness program. They include evaluating your health-related fitness components, setting personal goals, selecting appropriate activities, applying the F.I.T. formula, tracking your progress, and periodically re-evaluating your fitness level.

Motivation is important to include in your personal fitness program to help you continue with your exercise program. All of us need encouragement to help us stay on a workout schedule and eat nutritiously.

The positive effects of exercise occur as a result of regular and consistent efforts. You must use energy to gain energy. Treat your body well and feel the benefits. Become fit so you can enjoy a full and long life!

Fitness Career Opportunity!

Athletic Director

They manage athletic programs in schools or colleges. They direct coaches, ticket sales, athletic facilities, trainers, and sports information offices. Some athletic directors also teach and coach.

Broadcasting

Broadcasters work as on-air "talent" doing sports reporting or commentary on radio or television. Technicians work behind the scenes in production, direction, or technical operations.

Exercise Physiologist

They study the effects of exercise on the body. They use their studies to design individual exercise programs. These scientists are often employed by universities. They may also work at sports medicine clinics, in competitive sports programs, and at health clubs.

Fitness/Sports Psychologist

They help athletes improve their attitude and ability to focus in athletic activities. They work with individual athletes or teams, or teach and conduct research at the college level.

Health Club Manager

They manage the day-to-day operations, marketing, membership sales, and athletic and fitness programming in a health club.

Orthopedist

These doctors treat muscular or skeletal injuries. Doctors who specialize in sports-medicine may practice in sports-medicine clinics. They also may work as a team physician, treating, and preventing sports-related injuries.

Recreation Planner

They run recreational programs for governments or private companies. Their work may include scheduling sports leagues, developing camp programs, managing parks or company wellness programs.

Writer/Editor

They cover sports or fitness for different types of publications. They may write or edit for local papers, or national sports or fitness magazines. They may write or edit books on sports or fitness topics.

Youth/Recreational/Pro Official

They enforce the rules of athletic games from grade schools to recreation leagues to professional sports. Working as a sports official is a good way to stay involved in a sport you love.

Other Active Career Opportunities

- Athletic Managers
- Chiropractors (spinal manipulation, realignment)
- Massage Therapists
- Dance Instructors
- Facility Designers
- Podiatrists (treats foot, ankle problems)
- Sports photographers
- Public Relations Specialists
- Team Owners
- Scouts
- Sporting Goods Retailers and Salespeople

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Personal Fitness Program

Physical Fitness/Body Composition Profile

Purpose: To evaluate your current level of physical fitness and body composition. To periodically assess all health-related components of physical fitness for comparison and to check for improvements.

Procedure: Record all scores from earlier assessments on the profile on pages 306-307. Refer to the previous units on body composition, flexibility, muscular fitness, and cardiovascular fitness. Reassess all or part of the tests after four weeks and then again after eight weeks of your personal fitness program.

Results of Physical Fitness/Body Composition Profile

1. List in order your strongest areas of fitness. ____________________

   ____

   ____

2. Beginning with the weakest area, list the areas of fitness that you need to improve.

   ____

   ____

3. List the areas of fitness that you need to maintain at your current level.

   ____

Physical Fitness/Body Composition Profile

	1st Test	2nd Test	3rd Test
Muscle Fitness			
1. Grip Strength	Date: Score: Rating: Goals:		
2. Isometric Leg Squat	Date: Score: Rating: Goals:		
3. Curl-Ups	Date: Score: Rating: Goals:		
4. Push-Ups	Date: Score: Rating: Goals:		
5. Pull-Ups (male only)	Date: Score: Rating: Goals:		
6. Flexed-Arm Hang (females)	Date: Score: Rating: Goals:		
Cardiovascular Fitness			
1. Resting Heart Rate	Date: Score: Rating: Goals:		
2. One-Mile Run	Date: Score: Rating: Goals:		
3. Three-Minute Step Test	Date: Score: Rating: Goals:		

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	1st Test	2nd Test	3rd Test
Body Composition			
1. Waist-to-hip ratio	Date: Score: Rating: Goals:		
2. Body fat percentage	Date: Score: Rating: Goals:		
3. Body mass index	Date: Score: Rating: Goals:		
4. Ideal body weight	Date: Score: Rating: Goals:		
Flexibility			
1. Shoulder	Date: Score: Rating: Goals:		
2. Hip flexion	Date: Score: Rating: Goals:		
3. Hamstring	Date: Score: Rating: Goals:		
4. Back extension	Date: Score: Rating: Goals:		
5. Trunk flexion	Date: Score: Rating: Goals:		

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Personal Fitness Program

Designing a Body Composition Program

1. My current

   a) waist-to-hip ratio is __________ .

   b) body mass index is __________ .

   c) body fat percentage is__________ .

   d) ideal body weight (too low, okay, or too high) ____________ .

2. I need to improve my body composition in the following ways. (*Examples:* to add more muscular strength in the upper body; to reduce fat in the hips, thighs, and abdominal region, etc.)

   ____

3. My current body type is ______________________________ . (*Examples:* ectomorph–long and lean; mesomorph–trim and athletic; endomorph–round and soft; or a combination of two. See p. 57.)

   ____

4. The following areas of my body composition are adequate. (*Examples*: good upper body muscle strength; low body fat in lower body.)

   ____

5. The following activities, exercises, or nutritional habits can help to improve my body composition.

   ____

   ____

   ____

Personal Fitness Program

6. I need to work on the following eating disorder or problem.

____

7. I will include the following tips for healthy eating and weight control in my program. (Refer to Unit 2: *Body Composition and Nutrition*, p. 63.)

____

____

8. Goals to improve my body composition include:

Short-term: (*Examples*: eliminate one junk food from my daily diet; eat at a fast-food restaurant only once a week.)

a. ____

b. ____

c. ____

d. ____

e. ____

Long-term: (*Example*: reduce my body fat composition by one or two percent in the next eight weeks.)

a. ____

b. ____

c. ____

d. ____

e. ____

Designing a Flexibility Program (See Unit 3)

1. My current flexibility rating in my

   upper body is ______________________________ .

   trunk region is ______________________________ .

   lower body is ______________________________ .

2. I need to improve my flexibility in the following areas or muscles of the body.

   ____

3. I have adequate flexibility in these areas or muscles of the body.

   ____

4. I intend to use the following activities and exercises to improve my flexibility.

   ____

   ____

5. I intend to spend __________ minutes on flexibility every time I workout. I will include the following activities and exercises in my warm-up.

   ____

   I will use the following activities and exercises in my cool-down.

   ____

   ____

6. Goals to improve my flexibility include:

Short-term: (*Examples*: improve the flexibility of my hamstrings; be able to touch my toes.)

a. ____

b. ____

c. ____

d. ____

e. ____

Long-term: (*Examples*: improve hamstring flexibility rating from average to good; improve flexibility in calf muscles to prevent shin splints.)

a. ____

b. ____

c. ____

d. ____

e. ____

Designing a Muscular Fitness Program (See Unit 4)

1. My current rating in my

   lower body is ______________________________ .

   trunk/abdominals is ______________________________ .

   upper body is ______________________________ .

   grip strength is ______________________________ .

2. I need to improve my muscular fitness in the following areas or muscles of the body.

   ____

3. I am strongest in muscular fitness in the following areas or muscles of the body.

   ____

4. In my muscular fitness program I want to accomplish the following things. (*Examples*: to build muscular strength and firm muscles; to increase strength in certain areas, etc.)

   ____

5. I will develop my muscular strength and/or endurance by using the following activities and exercises.

   ____

6. I intend to perform muscular fitness exercises for ____________ (time)

   on ____________ (days).

Personal Fitness Program

7. Goals to improve my muscular strength and/or endurance include:

Short-term: (*Examples*: to be able to do two pull-ups; to increase upper body strength.)

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

Long-term: (*Examples*: to increase abdominal strength rating from average to good; to improve posture by strengthening abdominals and back muscles.)

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

Designing a Cardiovascular Fitness Program (See Unit 5)

1. My current cardiovascular fitness rating is ____________________ .
2. I will participate in the following activities and exercises to improve my cardiovascular fitness.

   ____

3. I intend to set aside ____________ (amount of time) on ____________ (days) for aerobic exercise.

The following are goals to improve my cardiovascular fitness.

Short-term: (*Examples*: to increase the length I can participate in an activity; to be able to move from walking to jogging.)

a. ____

b. ____

c. ____

d. ____

e. ____

Long-term: (*Examples*: to work at 80-85% of maximum heart rate for 45-60 minutes; to lower resting heart rate by five beats per minute.)

a. ____

b. ____

c. ____

d. ______________________________

e. ______________________________

It is important to try to burn around 300 calories each time you exercise aerobically. To determine your calorie usage, refer to Unit 2: *Body Composition and Nutrition*. (See *Calorie Usage in Activities*, p. 79.)

My Personal Fitness Program

Fill in the blanks to design your personal fitness program.

Name: ______________________ **Date:** __________

Activities/Sports/Exercises:

____

____

____

____

____

Clothing/Equipment:

____

____

____

____

Where:

____

Alone or with others:

____

When:

____

Frequency:

____

Amount of time:

____

Warm-up and cool-down activities:

____

____

____

Support group:

____

Comments:

____

____

____

Motivational strategies:

____

____

____

Personal Fitness Program

Behavioral Contract for Exercise

Making a written agreement with yourself can help you to stay on track to meet your goals. Fill out the behavioral contract below. This contract will help commit you to a healthier lifestyle.

My Personal Fitness Contract

I, ______________________ *, am making the commitment to myself to change the following behaviors:* ______________________

I will do this by (how you will do it) ______________________

I will do this (how often you will do it) ______________________

I am doing this because ______________________

I will reward myself by feeling good about myself and by ______________________

My penalty will be ______________________

______________________ Signature

______________________ Date

______________________ Support Person's Signature

______________________ Review Date

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My Exercise/Workout Log

Purpose: To help you monitor your physical fitness activities. This can help in determining your rate of progress and also aid in goal-setting.

Procedures: Record your activities each time you exercise. Include the date, the fitness activity, intensity (heart rate), time spent, component of fitness it mainly develops, and your personal comments.

Note how you felt during the actual exercise as well as afterwards.

Include comments about where you performed the exercise and whether you were alone or with others.

Have a support person, such as a parent, initial your exercise log each time to verify that you completed the activity.

Workout Log

Week #______

Date	Activity	Intensity (heart rate)	Time	Component (fitness/health)	Comments (feelings/attitude)	Initials
1.						
2.						
3.						
4.						
5.						
6.						
7.						

Muscular Fitness Activities

Workout Log

Name: ____________________

Exercise	Date																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	
	Weight																	
	Sets																	
	Reps																	

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Personal Fitness Program

Short Answer

Answer each question below with a short answer.

1. What are the health-related fitness components that a fitness program should work on?

2. What are the five steps necessary in designing your personal fitness program?

3. What five things can motivate you to stick with your exercise program for a long time?

Personal Fitness Program

4. Why is it important to re-evaluate your physical fitness periodically?

____

____

5. What are three of the benefits of keeping a workout log?

____

____

____

6. What kinds of experiences might cause you to change your personal fitness program?

____

____

____

Personal Fitness Program

True or False

Write **true** *if the statement is correct. Write* **false** *if the statement is* not *correct.*

________ 1. A total personal fitness program can include only intense aerobic exercise.

________ 2. Regular exercise will enable a person to have more energy for daily activities.

________ 3. Once you become physically fit or reach your goals you do not need to continue exercising regularly.

________ 4. The mile run is one method of measuring cardiovascular fitness.

________ 5. After exercising vigorously you should stop immediately and rest until your heart rate returns to normal.

________ 6. Sports such as golf, baseball, and football are good for developing cardiovascular fitness.

________ 7. Karate, calisthenics, gymnastics, and aerobic dance are all activities that can improve your flexibility.

________ 8. There is no single exercise or activity that will develop all of the health-related fitness components.

________ 9. If your strength rating is good, you do not need to include muscular fitness exercises in your personal fitness program to maintain that level.

________ 10. A running program will improve all of the health-related components of physical fitness.

________ 11. A physical fitness program can be designed to help you either gain muscle weight or lose fat weight.

________ 12. As you get older, a medical exam is usually not necessary before starting an exercise program.

________ 13. Setting personal goals is an important ingredient to achieving success in your personal fitness program.

________ 14. Cross training can help to prevent boredom and burnout in an exercise program.

________ 15. A warm-up and cool-down are only necessary before strenuous workouts.

________ 16. Evaluation of your physical fitness can help you to determine where you should begin in your exercise program.

________ 17. Evaluating your fitness, setting goals, selecting activities, applying the training principles, and tracking your progress are the steps in designing a personal fitness program.

________ 18. Effectiveness of the exercise, enjoyment of the activity, your time schedule, and location are a few of the factors to consider in the selection of activities.

________ 19. Motivation is only necessary for individuals lacking will power and discipline.

________ 20. The positive effects of exercise occur as a result of regular and consistent efforts, or lifestyle commitment.

Personal Fitness Program

Multiple Choice

Circle the letter of each correct answer.

1. A personal fitness program should be designed ____________ .

   a. so you won't ever need to change it
   b. to fit your needs and goals
   c. to include competition
   d. to be extremely difficult

2. A personal fitness program should ____________ .

   a. include activities you enjoy
   b. be changed from time to time
   c. follow the principles of training (F.I.T. formula)
   d all of the above

3. Regular exercise can ____________ .

   a. help you to look and feel better
   b. help you cope with every day stress
   c. improve your overall physical fitness and health
   d.. all of the above

4. ____________ is not a health-related component of fitness

   a. Muscular strength
   b. Body composition
   c. Coordination
   d. Cardiovascular fitness

5. ____________ is not considered an aerobic activity and therefore would not increase your cardiovascular fitness.

   a. Swimming
   b. Weight lifting
   c. Bicycling
   d. Jogging

6. ____________ is fitness of the whole person including the physical, mental, social, emotional, and spiritual self.

   a. Perfect health
   b. Total fitness and wellness
   c. Optimal health
   d. None of the above

7. ____________ is a program you design to improve your total fitness.

   a. Strength and endurance workout
   b. Personal self-help
   c. Personal fitness program
   d. Fitness and diet support group

8. ____________ defines the way a person conducts his or her daily life.

   a. Possessed
   b. Intuition
   c. Lifestyle
   d. Obsessive compulsive

9. ____________ includes using a variety of activities to improve a fitness component or specific part of the body.

   a. Fitness hiking
   b. Physical education
   c. Running cross country
   d. Cross training

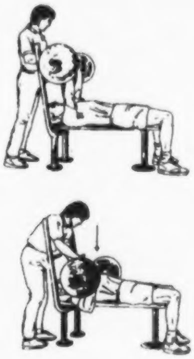
10. Encouragement, or ____________ , will help you to stick with your exercise program.

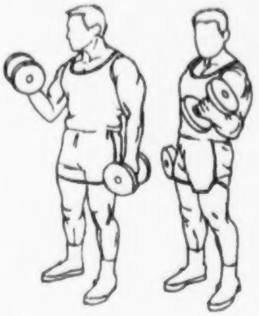
   a. enthusiasm
   b. dedication
   c. motivation
   d. commitment

Personal Fitness Program

Identification

Identify each exercise below. Write the name of the exercise on line a. and the muscle group it helps on line b.



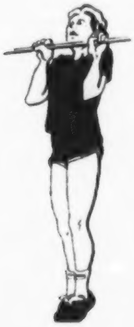


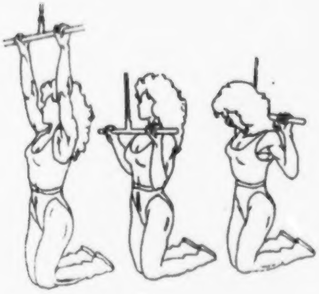
1. a) ____________________

b) ____________________

2. a) ____________________

b) ____________________



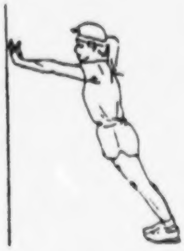


3. a) ____________________

b) ____________________

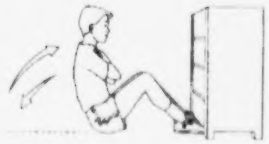
4. a) ____________________

b) ____________________



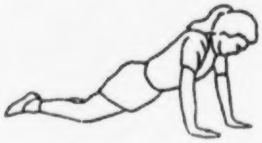
5. a) ______________________

b) ______________________



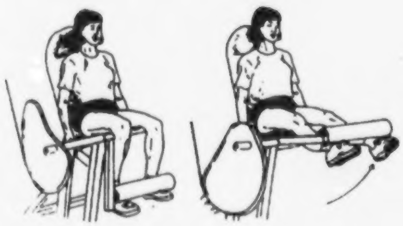
6. a) ______________________

b) ______________________



7. a) ______________________

b) ______________________



8. a) ______________________

b) ______________________

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Appendix B

Help Agencies

American Aneroxia and Bulimia Association
133 Cedar Lane
Teaneck, NJ 07666
1-201-836-1800

American Cancer Society
National Headquarters
1599 Clifton Rd. NE
Atlanta, GA 30329

American College of Sports Medicine
P.O. Box 1440
Indianapolis, IN 46206
1-317-637-9200

American Dietetic Association
216 W. Jackson Blvd., Suite 800
Chicago, IL 60606-6995
1-800-877-1600

American Heart Association
National Center
7320 Greenville Avenue
Dallas, TX 75231
1-214-750-5300

American Medical Association
535 N. Dearborn Street
Chicago, IL 60610
1-800-621-8335

American Running and Fitness Association
2420 K Street
Washington, DC 20037

Anorexia Nervosa and Related Eating Disorders
P.O. Box 5102
Eugene, OR 97045
1-503-344-1144

Bureau of Health Professions
Health Resources and Services Administration
Parklawn Bldg., Room 8A-03
5600 Fishers Lane
Rockville, MD 20857
1-301-443-2060

Centers for Disease Control
Office of Public Affairs
Dept. of Health and Human Services
1600 Clifton Rd, NE
Atlanta, GA 30333
1-404-329-3534

Consumer Information Center
General Services Administration
Pueblo, CO 81009
1-719-948-3334

Harvard Medical School Health Letter
Department of Continuing Education
25 Shattuck Street
Boston, MS 02115

National Dairy Council
111 North Canal Street
Chicago, IL 60606

Nutrition Action Health Letter
Center for Science in the Public Interest
1875 Connecticut Avenue., NW, Suite 300
Washington, DC 20009-5728

Office of Disease Prevention and Health Promotion
P.O. Box 1133
Washington, DC 20013-1133
1-800-336-4797

Office of Prevention, Education and Control
The National Heart, Lung, and Blood Institute
Bethesda, MD 20892
1-301-496-0054

President's Council on Physical Fitness and Sports
701 Pennsylvania Avenue NW, Suite 250
Washington, DC 20004
1-202-272-3421

Project LEAN
Low-Fat Eating for America Now
P.O. Box 8049
Young America, MN 44351-8049

U.S. Department of Agriculture
Human Nutrition Research Branch
14th Street and Independence Ave. SW
Washington, DC 20250

U.S. Public Health Service
Public Inquiries Branch
200 Independence Ave. SW
Washington, DC 20201

Appendix C

References

AAU Physical Fitness Program, 1993-94. Testing Packet.

Aerobics Fitness Association of America. *Fitness: Theory and Practice.* Boston: Reebok UP, 1993.

Alter, Michael J. *Sports Stretch.* Champaign, IL: Leisure Press, 1990.

American Council on Exercise. *Personal Trainer Manual.* Boston: Reebok UP, 1991.

American Heart Association. *Exercise and Your Heart.* Dallas: American Heart Association, 1993.

Anderson, Bob, Ed Burke, and Bill Pearl. *Getting in Shape.* Bolinas, CA: Shelter Publications, 1994.

Bailey, Covert. *Smart Exercise.* Boston: Houghton Mifflin, 1994.

Baechle, Thomas R., and Barney Groves. *Weight Training: Steps to Success.* Champaign, IL: Leisure Press, 1992.

Clark, Nancy. *Sports Nutrition Guidebook.* Champaign, IL: Leisure Press, 1990.

Cooper, Kenneth. *Kid Fitness: The Complete Shape-Up Program from Birth Through High School.* New York: Bantam, 1991.

Greenberg, Jerrold, and Robert Gold. *Health.* New York: Holt, 1994.

Howley, Edward T., and B. Don Franks. *Health and Fitness Instructor's Handbook.* Champaign, IL: Human Kinetics Books, 1992.

Moore, Clancy, and Roberta Stokes. *Personal Fitness and You.* Winston-Salem, NC: Hunter Textbooks, 1986.

Williams, Charles S., et. al. *Personal Fitness: Looking Good, Feeling Good.* Dubuque, IA: Kendall/Hunt, 1986.

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